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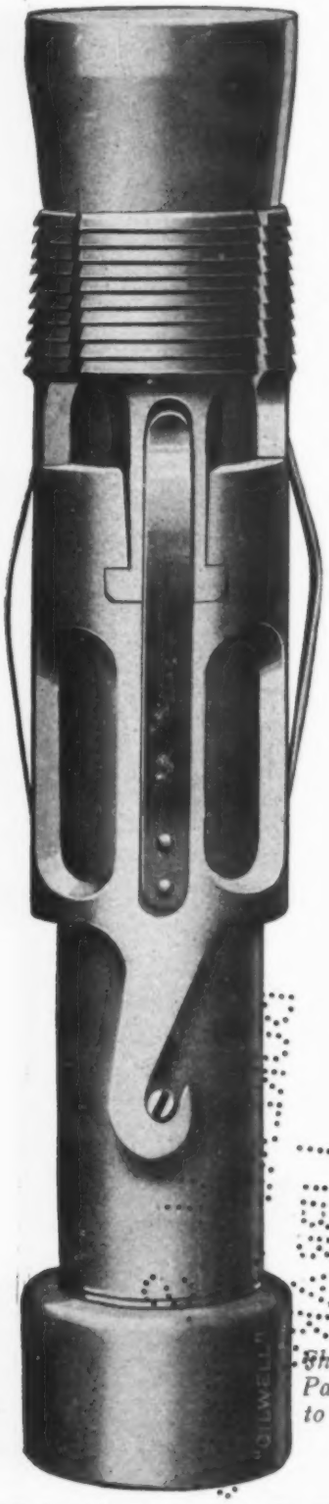
"OILWELL" TOOL SET CAVE PACKER



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WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

Say you saw it in The OIL WEEKLY

Continued Production Decline Helps Market Outlook

Decline continues gradual but certain; refiners attempt raising gasoline price following reduction in plant operations

By KENT RIDLEY

ALTHOUGH the change in crude postings announced by Magnolia Petroleum Company on September 14 amounts to little more than a gesture, the fact that this company sees fit to get in line with other buyers by raising a few cents has been taken as a hopeful sign in many quarters. At least such action can not be taken as evidence of further weakness. Cuts of 10 cents in Arkansas and at Urania in Louisiana are strictly local and of no general significance.

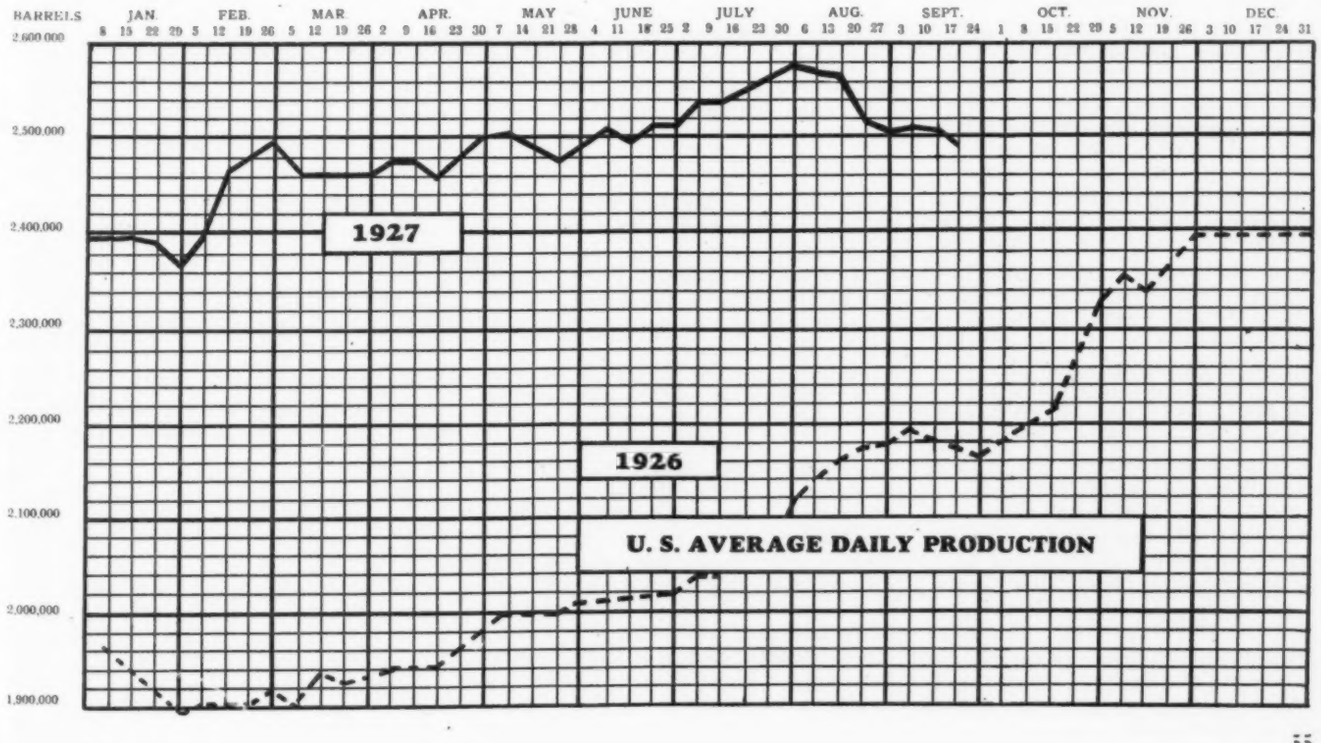
Further cause for a more promising outlook is that the production curve is continuing downward; Seminole is performing erratically and far below the limit set by the curtailment agreement there, and Little River, which promised to become a serious menace, is no longer greatly so considered, because of water encroachment and lower gas pressure, while in West Texas a show of water has developed after operators there had agreed to limit their output.

American Petroleum Institute estimates give the total for last week at 2,494,850 barrels, which is 10,550 barrels under the total for the previous week. The decline was general in all important areas, except Texas, where an increase of 4700 barrels was shown. The Texas Gulf Coast was up 5300 barrels by virtue of increases at Spindle Top and Pierce Junction, West Texas was up 2000 barrels and East Central Texas up slightly, declines in other fields bringing the State total down to the figure named. Oklahoma was off 11,200 barrels for the week, with the Seminole area being the principal contributor to the loss. This area, however, is reacting in later reports, with some big completions in the Earlsboro pool. Kansas, Arkansas and California and the Rocky Mountain area were each given a slump of 300 barrels in the estimate, while Eastern States were off 950 barrels and Louisiana 1350 barrels.

Fewer completions are recorded in the current report, but more of them were oil producers and the initial production was much greater. Completions numbered 416, of which 263 were oil wells, 45 gas and 108 failures. Initial production was 118,873 barrels, approximately 50,000 barrels over the total of 68,426 barrels reported for the previous period. Oklahoma contributed heavily to the total of both new wells and initial production, 48 wells accounting for 63,976 barrels of new oil. In Texas 55 producers gave up a total of 34,966 barrels initial, which was 6000 barrels more than was produced by 54 wells reported for the previous week. California reported 19 new wells, the same number as for the week previous, had 14,465 barrels, an increase in well average, while Kansas also had better wells, 21 completions showing 2730 barrels, as against only 240 barrels from 20 wells the week previous. Fourteen of Louisiana's 17 completions were gassers or failures, and the total initial reported was only 267 barrels.

Due to increases in Texas and Louisiana, the total number of permits is-

UNITED STATES CRUDE PRODUCTION TREND



DETAILS ON CRITICAL FIELDS

Pool—	Oil Wells Completed	Total Initial Production	Initial Per Well	No. Producing Wells	Daily Production Barrels	Daily Production Per Well	Rigs Up	Wells Drilling
CALIFORNIA—								
Seal Beach	182	255,752	1,405	94	70,100	746	61	60
OKLAHOMA—								
Seminole	887	1,219,449	1,375	810	436,683	539	36	430
PANHANDLE—								
Hutchinson County	1,061	539,225	508	991	77,780	78	4	57
Gray County	159	47,620	299	154	9,580	62	7	34
Carson County	173	57,450	332	158	8,660	55	..	14
Wheeler County	39	13,950	358	33	1,440	44	1	13
Totals	1,432	658,245	460	1,336	97,460	73	12	118
WEST TEXAS—								
Church & Fields	139	170,970	1,230	139	87,225*	628	8	18
Gulf-McElroy	48	43,910	915	46	15,750*	342	..	5
Totals	187	214,880	1,149	185	102,975	557	8	23

*Production partially pinched.

sued in the principal oil producing areas during the week ending September 16 was considerably higher than during the previous week, rising from 198 to 269. Texas issued 177 permits, as against 88 the previous week, and Louisiana granted 21 as compared with 14. All other reporting sections showed deceases in permits. In Arkansas there were four permits issued, a decrease of three; in California 13, a decrease of eight; Kansas 10, decrease of four, and in Oklahoma 44, as compared with 54 for the previous week.

The posted price for the principal grades of Mid-Continent crudes was restored by Magnolia Petroleum Company September 14 to the same level as that being paid by other major buyers. This action was taken by Magnolia after being one or two cuts ahead of other buyers since April 7. The price cutting spree was launched by the Carter Oil Company February 22, and Magnolia followed with additional price reduction on March 5, March 12, April 7 and April 20. The latter two cuts by Magnolia were not met by other buyers, and Magnolia cancelled one of the cuts May 5, but did not go back to the price scale used by others until last Thursday.

Magnolia did not suffer the loss of many connections during the period that its prices were below the general market, as the company is producing 75 per cent or more of its own crude requirements in Oklahoma, Texas, Arkansas, Louisiana and Kansas. The bulk of Magnolia's outside crude purchases are made in fields producing low gravity oils. Magnolia is taking steps to increase its supply of heavy oils through the construction of a trunk line to West Texas fields, and will have facilities to take about 18,000 barrels of oil daily from the latter district late this year. Magnolia's current production in West Texas will require about one-third of the line capacity.

The final adoption of an equitable proration plan by producers and lease owners in the Yates field, West Texas, was made September 15, with sufficient signatures to practically assure the holding down of flush production in this area to the available market outlet. Within 48 hours after this agreement was considered a closed matter, two flowing wells on the east side of the field developed water trouble, and indications are that all big producers located at low points on the structure will have to be operated on back pressure to hold back the water.

Refined Market

Favored with a slight improvement in spot sales of refined products within the past week, North Texas refiners have advanced their price quotations a fraction of a cent. Plant operations have been materially reduced in this district in recent weeks, and the curtailment of production has aided the plant owners in their struggle for better prices. Quotations on U. S. motor grade of gasoline early this week ranged from 5 7/8 to 6¼ cents per gallon, while kerosene and distillates were also slightly above the level maintained one week previous. North Texas fuel oil is selling at prices varying from 80 to 85 cents per barrel. Crude premiums above the posted price in North Texas have practically disappeared, other than those held in effect by contracts.

Seminole Operaitons Off

Seminole continues to offer nothing definite in its course any more than that operations are declining materially. Reports early this week showed 466 active locations against 500 of eight days previous. In the face of this, Earlsboro pool takes a spectacular increase, amounting to 22,000 barrels within less than a week. This sort of fluctuation has and is still being called just a temporary spurt, but such spurts at Seminole have followed one on the heels of the other until the real crude trend has more than kept operators guessing.

There is one substantial let-down to the strong price cut sentiment which prevailed at the opening of this month when Little River opened with all indications of equaling its forerunner pools of the Seminole area just at a time when the decline in motor fuel consumption could not stand another jump in the production level. Little River fails to present the fear to the industry today that it did during the early excitement there or even last week. Proration measures promise to keep dangerous production curtailed, and moreover, from present showings at Little River the committee on proration will have less to do than was expected. The appearance of salt water in three of the 13 producing wells there and weak gas pressure in one of these wells that brought the necessity during the week of air lift to keep production going, are running hand in hand to lower productive power of the pool. Its possibilities of turning tricky as other spots of Seminole have, are yet to be determined.

Field activity over Oklahoma generally is quieter, there being 1280 operations in the State at the opening of last week against 1325 the previous week. In Kansas there is a decrease of three to 291 operations.

With production in California gradually working higher, a little less optimism prevails in that territory than a few weeks ago, when the most dangerous fields of the State were in a decided slump. The Seal Beach field has shown an increase of as much as 15,000 barrels on several days. Even the most experienced operators will not hazard a guess as to the ultimate outcome. The Ventura field does not appear to be due for a large increase as the shut-in production fell under the original estimates.

Gasoline consumption has shown a steady decrease in California since Labor Day. The decline has been gradual, with the exception of the past week, when the first unsettled weather of the fall season caused a wholesale cancellation of week-end trips and a rush of the late summer tourists to the old home town.

California Exports to points south of the equator, particularly Australia, have been very good during the past week. That country has been taking immense quantities of gasoline from California refineries. Exports to Japan have been reduced some, but European shipments have shown a healthy growth.

Marion County, Kansas, Has Wildcat Show

Wichita, Kansas.—Indications of a new pool being opened in the Lost Springs vicinity, northeastern Marion County, and about 85 miles northeast of Wichita, were good at the close of the week just past with Winters & Harwood's wildcat in the southwest of the southeast of the southwest of section 2-17-4e, two and one-half miles northeast of Lost Springs, standing between 700 and 800 feet in oil from 2390-96 feet. Production is from chat formation and filled 250 feet of the hole in one hour.

The wildcat is located in virgin territory, which has recently come to the fore in interest. Practically all of the surroundng acreage has been leased up. John Findeiss of Wichita owns an offset tract, and Skelly Oil Company, Phillips Petroleum Company and the Prairie Oil & Gas Company have protection acreage.

Tulsa Exposition Will Be Big Educational Event

Businesslike preparations made for showing of better methods in all branches of Industry; committees named

By WALLACE DAVIS
Staff Representative

TULSA—Preparatory work for the International Petroleum Exposition, scheduled for September 24-October 1, was rounding into shape more than a week prior to the opening date for what its officials class as the biggest and most businesslike oil and gas exposition ever held.

As early as September 14 the exhibitor contracts for space numbered 235, which represent more than 300 concerns, as in some cases more than one concern is included in a single contract. Contract space was nearing the $100,000 mark at that time. Exhibits valued at between $8,000,000 and $10,000,000, including everything from the delicate seismograph to the tank car, are going on display in the new and larger quarters located east of the city, quarters obtained as a result of the growth of the exposition and the necessity for more and better space.

The importance of the exposition at this particular time is stressed in a statement recently made by W. G. Skelly, president of the exposition, as follows:

"At a time when the great petroleum industry is striving to eliminate waste and attain the greatest possible efficiency, not only for those financially interested, but also for the general welfare of the nation, the International Petroleum Exposition steps forward with a practical idea to aid every one directly connected with the industry. The exposition this year will be a real 'World's Fair of the Oil Industry' for practical oil men, and we believe it will be invaluable to those who attend. The exposition board wishes to extend its heartiest invitation to all members of the oil fraternity and the public at large to attend this year's exposition."

Strictly Business

The businesslike side of the exposition is particularly stressed. It differs from previous International Petroleum Expositions, mainly in the development this year of the educational value of the exposition. The amusement phase of the meeting has to a great extent been eliminated. There will be no pageants, no queens, no parades. The time required for this side of the exposition in former years is being devoted to work which will tend to actually instruct, advise and educate those who attend. And in bringing in these educational touches the exposition heads have strived to get everything of value to oil men lined up in a direct connection with the affair.

President Coolidge will officially open the gates to the exposition grounds Saturday afternoon, September 24, by pressing a button in Washington. Prior to the official opening appropriate ceremonies will be held in Tulsa, and will be broadcast by radio by Station KVOO.

Reduced railroad rates, granting round trip fares from all over the United States and also Canadian connections of one and one-third to one and one-half of the regular one-way rates, depending on the distance, were made by the various passenger associations over the country. Ticket agents at all points have the details of registration and validation.

Hotels Taxed

Indications of a large attendance is shown by the fact that the committee on reservations were kept busy from late in August to the beginning of the third week in September handling requests for hotel space coming in by mail and wire, but housing space was still available one week before the opening due to addition of further hotel space since the last exposition. Statements from members of the committee on reservations early last week were to the effect that practically all of the available housing facilities would be taken up by the time the exposition was well under way.

Newly elected directors to the board brings the total number, including officers, to 37. Present officials and directors of the exposition are as follows:

President, W. G. Skelly, president Skelly Oil Company.

Vice president, Alf G. Heggem, president Oil Well Improvement Company.

Vice president, Frank Hinderliter, president Hinderliter Tool Company.

Secretary, William Holden, secretary Tulsa Chamber of Commerce.

Treasurer, James J. McGraw, president Exchange National Bank.

Assistant Treasurer, P. D. Hayes, assistant cashier, Exchange National Bank.

Directors

A. F. Bourne, secretary-treasurer Oklahoma Iron Works.

W. M. Bovaird, secretary-treasurer Bovaird Supply Company.

A. W. Leonard, vice president and general manager Devonian Oil Company.

O. C. Staples, manager machinery department Frick-Reid Supply Company.

D. D. Wertzberger, president Wertzberger Derrick Company.

Fred W. Insull, president Public Service Company of Oklahoma.

R. C. Sharp—President Oklahoma Natural Gas Corporation.

Ralph B. Pringle, vice president Independent Oil & Gas Company.

J. S. Sidwell—Assistant superintendent Prairie Oil & Gas Company.

John M. Lovejoy—Vice president Ameranda Petroleum Corporation.

Howard M. Cole—Vice president Pure Oil Company.

Clyde Pape—Secretary and treasurer Selby Oil & Gas Company.

Jacob France—President Mid-Continent Petroleum Corporation.

Clyde Alexander—Vice president Phillips Petroleum Company, Bartlesville.

Walter Miller—Vice president Marland Refining Company, Ponca City.

Ernest Nickles—Vice president The Texas Company.

A. A. Beard—General superintendent Tidal Oil Company.

C. P. Dimit—Vice president Gypsy Oil Company.

Victor H. Smith—Vice president North American Car Corporation.

H. V. Foster—President Indian Territory Illuminating Oil Company, Bartlesville.

J. M. Hayner — President Hayner-Reeves Company.

G. A. Dye—Vice president Wilcox Oil & Gas Company.

R. F. Garland—Independent Oil operator.

Walter Gray—President Jaracki Supply Company.

Robert W. Egan—General manager Oil and Gas Journal.

J. M. Post—Manager Oil Well Supply Company.

Warren C. Platt—Editor and publisher National Petroleum News, Cleveland.

Ray L. Dudley—President Gulf Publishing Company, Houston.

Waite Phillips—President the Philmac Company.

R. A. Griffith—President Sinclair Oil Company.

J. Edgar Pew—Vice president Sun Oil Company, Dallas.

Following are the lists of committees in charge of the various phases of the exposition:

Transportation Committee

Edward W. Wilson, chairman—Frick-Reid Supply Company.

E. N. Adams—Tulsa Traffic Association.

P. E. Buesse—Frisco Railway Company.

Chester Bodley—Pennsylvania System.

J. A. Frates, Sr.—Oklahoma Union Railway Company.

Bert Hilburn—Tulsa Street Railway Company.

J. W. James—Frisco Railway Company.

(Continued on page 60)

Some of Those Behind the Fourth Annual Petroleum Exposition

ALF G. HEGGEM

R. C. SHARP

F. J. HINDERLITER

FRED W. INSULL

J. J. McGRAW

W. G. SKELLY
PRESIDENT

W. M. BOVAIRD

D. D. WERTZBERGER

O. C. STAPLES

H. N. COLE

GEORGE A. DYE

WILLIAM HOLDEN

ROBERT F. GARLAND

R. A. GRIFFITH

Some of Those Behind the Fourth Annual Petroleum Exposition

Tulsa Exposition Will Be Big Educational Event

(Continued from page 57)

J. W. Klein—Midland Valley Railroad.
J. S. Rollman—Santa Fe.
W. L. Meyers—Katy Railroad.
A. H. Farrar—Baltimore & Ohio.
J. L. Carleton—New York Central.

Exhibits Committee

Frank J. Hinderliter, chairman—Hinderliter Tool Company.
O. C. Staples—Frick-Reid Supply Company.
A. W. Leonard—Devonian Oil Company.
C. C. Meyer—Remedial Finance Corporation.
Clarence Morris—Oil & Gas Journal.
Jess Norval—Norval & Dial.
D. E. Buchanan—Chestnut & Smith Corporation.
G. A. Thompson—Empire Companies, Bartlesville.
H. M. Cosgrove—Secretary Purchasing Agents Association.
R. R. Barlow—Independent Oil & Gas Company.

Convention and Group Meetings Committee

A. W. Leonard, chairman—Devonian Oil Company.
James H. Gardner, vice chairman—Gardner Petroleum Company.
Howard Bennette—Secretary Western Petroleum Refiners Association.
Harry Smith—Secretary Mid-Continent Oil & Gas Association.
A. V. Bourque—Secretary Association of Natural Gasoline Manufacturers Association.
Clark Field — Chairman Conventions Committee, Tulsa Chamber of Commerce.
John Mayo—President Mayo Hotel Company.
Lawrence J. Smith—National Petroleum News.
Henry Ketchum—Hotel Tulsa.

Hotel Committee

Fred Insull, chairman—President Oklahoma Service Corporation.
J. M. Hayner—Vice chairman.
A. V. Bourque—Secretary Association of Natural Gasoline Manufacturers.
W. C. Franklin—Tidal Oil Company.
Harry Gale—Producers National Bank.
D. W. Moffitt—Mid-Continent Petroleum Corporation.

Aviation Committee

Frank Matchett, chairman—Exchange National Bank.
Morris Turner—Forest Park Company.
M. H. Kotzebue—Tulsa Boiler & Machinery Company.
D. A. McIntyre—McIntyre Air Port.
E. Fred Johnston—Exchange Trust Company.
Willis C. Brown—Foxboro Company.

Contests and Safety Drills Committee

Don Wallace, chairman—Director safety division Mid-Continent Oil & Gas Association.
A. F. Bourne—Oklahoma Iron Works.
Glenn Condon—Skelly Oil Company.
Rodney Quinby — Burroughs Adding Machine Company.
E. D. Murphey—Mid-Continent Petroleum Corporation.
Glen Dial—Norval & Dial.
J. F. Carter, Jr.—Manager Mid-Continent office The Oil Weekly.
Ray E. Miller—Marland Oil Company, Ponca City.
C. L. Swim—Skelly Oil Company.
George Bunn—Phillips Petroleum Company, Bartlesville.
Victor Hayslip—Humble Oil & Refining Company, Houston.

Buildings and Grounds Committee

D. D. Wertzberger, chairman—Wertzberger Derrick Company.
Alf Heggem—Oil Well Improvements Company.
Frank J. Hinderliter—Hinderliter Tool Company.

Police and Fire Protection Committee

P. D. Hayes, chairman—Exchange National Bank.
Alf Heggem—Oil Well Improvements Company.
A. W. Leonard—Devonian Oil Company.

Standard Rig Committee

D. D. Wertzberger, chairman—Wertzberger Derrick Company.
Frank J. Hinderliter—Hinderliter Tool Company.

Scientific and Technical Exhibits Committee

Alf G. Heggem, chairman—Oil Well Improvements Company.
Chas. N. Gould—Director Geological Survey of Oklahoma.
Frank Greene—Skelly Oil Company.
Luther White—Hull Oil Corporation.
Sidney Powers — Amerada Petroleum Corporation.
Robert H. Wood—Geologist.
Frank A. Herald—Geologist.
W. L. Foster—Professor of geology, Tulsa University.

"It wouldn't be complete without the Drake well."

ABOVE IS A REPLICA OF THE FAMOUS DISCOVERY WELL AT THE EXPOSITION

Dr. Van Holst Pellikan—Head land and geology department, Roxana Petroleum Corporation, St. Louis.
George C. Matson—Geologist.
J. M. McFarland—Twin State Oil Company.
John M. Lovejoy—Amerada Petroleum Corporation.
James H. Gardner—Gardner Petroleum Company.
Dr. C. K. Francis—Skelly Oil Company.
W. B. Wilson—Chief geologist Gypsy Oil Company.

All foreign representatives in the United States were invited by the United States Department of State to send representatives to the exposition, and several of these have accepted. Representatives of several foreign oil companies have accepted invitations to come, and there is expected to be some exhibits of foreign manufacturing concerns. Technicians and other representatives of foreign oil and manufacturing companies are believed to be responding more this year than at any previous exposition to invitations sent out by exposition officials. A third governor, early in September, accepted an invitation to the affair, Governor William Adams of Colorado making known his intention of being present. Governor Johnston of Oklahoma and Governor Paulen of Kansas had previously announced that they would attend the exposition. Also several attorneys and members of the corporation commissions have accepted invitations to be on hand.

Aviation

One of the outstanding features of the exposition this year is the part which aviation is taking in connection with the oil show. Aviation for the first time is being brought officially in close touch with the oil industry. Plans are completed for special tests of motor fuel under the auspices of the National Aeronautics Association. More than 20 aeroplanes carrying approximately 70 passengers are expected to attend the exposition, from announcements received by Manager J. Burr Gibbons. Definite word that 20 planes will be flown to Tulsa has been received, and several more were expected to come unannounced, officials said. Besides these there are about eight local planes in shape to take part in the air program to be held.

Topping the list of planes is the "Spirit of St. Louis," with Colonel Charles A. Lindbergh, who is scheduled to be in Tulsa September 30. An army "blimp" will also make the trip from Scott field for the exposition. The giant tri-motored monoplane "Standolind," of the Standard Oil Company of Indiana, will bring Chairman Robert W. Stewart of the board of directors; Vice Presidents Allan Jackson, R. H. McElroy and E. J. Bullock and two or three other officials of the company from Chicago on Thursday, September 28.

Four officials of The Texas Company will be at the exposition in a Ryan monoplane, from Houston. They are President B. E. Hull, Vice President G. L. Noble, Assistant Sales Manager J. S. Leach and General Superintendent F. P.

(Continued on page 222)

Scientific and Technical Displays Have Broad Scope

Recent advances in discovery and recovery methods will be of interest to men of the industry and general public

TULSA—For the purpose of keeping in pace with the progress of the industry today the features displayed at the International Petroleum Exposition this year will bear strongly on the scientific and technical side. Such has been the plan of Manager J. Burr Gibbons throughout his work in arranging for displays and demonstrations.

"The value of science in the oil industry is rapidly coming to be more and more recognized," Mr. Gibbons stated in explaining the reason for featuring the scientific and technical, "and the scientific factor in its relation to the oil industry is fast growng to the point of having a big hand in shaping the policies of the major companies in aiding them to map their courses of development."

Recognition of the value of scientific and technical work in the industry on the part of the exposition heads has been largely instrumental in the erection of a special building to be devoted exclusively to the displays and demonstrations of equipment bordering along the scientific line of work and its connection in the industry.

Geophysics

Scientific methods of locating salt domes and structures and of outlining probable oil deposits after discovery of the dome or structure are to be demonstrated at the exposition for the first time to the general public. Scientific instruments making this work possible will be on display for the public's educational benefit for the first time.

Scientific methods of oil recovery will be demonstrated publicly at the exposition for the first time, including demonstrations of air and gas lift methods and expert instruction concerning the air and gas lift equipment. The outstanding problems facing these production methods will be brought up and explained by technicians experienced through handling the systems in practical use. Greatest probably among these problems is the corrosion factor, which can be personally studied by engineers and other field men.

Modern equipment especially designed to overcome outstanding field problems, including specialties of every kind now in use in the industry, is on display for inspection, and will be available for practical demonstrations or for thorough explanation for the benefit of the men of the industry.

Aviation and its value in connection with the oil industry will be given a prominent part at the exposition. Aerial demonstrations are scheduled as an important part of the program, and special tests of aeroplane motor fuel will be made under the auspices of the National Aeronautics Association.

Scientists and technicians will make up a larger part of the attendance at the exposition this year than this class of representation at any former petroleum exposition due to the stress being placed on the scientific and technical side of the industry this year.

Technical publications treating of the modern methods of recovery, manufacturing and refining in the oil industry and allied industries will make up the greater part of the library in the educational, scientific and technical building at the exposition. Papers dealing with the various engineering problems encountered in the industry will be found in bound form in this library.

The educational, scientific and technical building will function at the exposition as a veritable school for engineers, technicians and field men generally, in offering displays, demonstrations and instructions.

Educational Features

The educational phase of every factor embodied in the affair this year has been strictly stressed. The successful results to grow out of the exposition as a result of its educational value to men of the industry was seen early in September to be practically insured.

The statement of Manager Gibbons that "The policy of the exposition was changed for the 1927 show so that it might be purely technical and scientific and spectacles of amusements were deleted so that every effort could be made to interest and assist the exhibitor," expresses well the plans which were outlined at the beginning of arrangements.

"In preparing for the exposition this year we made an effort to strictly adhere to the type of program, the class of exhibits and the kind of demonstrations which would serve the oil man in the most practical way and to educate him along the lines in which he has formerly been unfamiliar," Mr. Gibbons explained.

The educational, scientific and technical building which has been built this year as an added attraction over anything heretofore offered at the exposition, is expected to be the leading feature of interest. Exhibits in this building have been selected purposely to educate men of the industry, from the executive to the lowest man in the field, and efforts have been made to include every phase of field work, beginning with equipment for exploration work and going down through the stages of production development, transportation and refining.

In the educational, scientific and technical building the visitor can study equipment and demonstrations of this equipment used in all lines of work in the industry.

Geological Specimens

The greatest collection of geological specimens ever known is on display in this building. Dr. Gould, State geologist of Oklahoma, with his staff of 25 prominent geologists of the State, has secured for this collection, together with specimens offered by the United States Geological Survey, every rock and formation penetrated by the bit in Oklahoma and in other sections of the Mid-Continent territory. The value of the geologist to the oil industry is plainly brought out by this collection. A set of paleontological specimens, including microscopic and megascopic fossils used in correlating the

(Continued on page 126)

AT THE EXPOSITION

The OIL WEEKLY'S booth is located on the main passageway connecting the Texas and Oklahoma buildings at the Exposition. It will be easy for you to find. We will be more than pleased to have you call to see us, make appointments to meet your friends, come in to write a letter, send a telegram, or just rest a minute. Some of us will be there so drop in and get acquainted.

The International Petroleum Exposition

IT IS unfortunate that attendance at the International Petroleum Exposition will of necessity be limited to a comparatively small part of the men engaged in the Industry. Shorn of the pageantry which has characterized previous efforts along this line at Tulsa, the educational features of the oil show this year become of that importance that it well deserves the attendance of every man responsibly associated with any branch of the business. Distance and the nature of the work naturally will place a limit upon the possible attendance, but fortunately many of the men who hold the real key positions in advancing the technology of the Industry will be among those who will appreciate the possibilities of profit from seeing recent advancements and improvements in tools and methods.

Advancement in all branches of the oil industry has been at a pace set by the makers of equipment for the Industry as they have met and anticipated the needs of the men who actually are the oil industry.

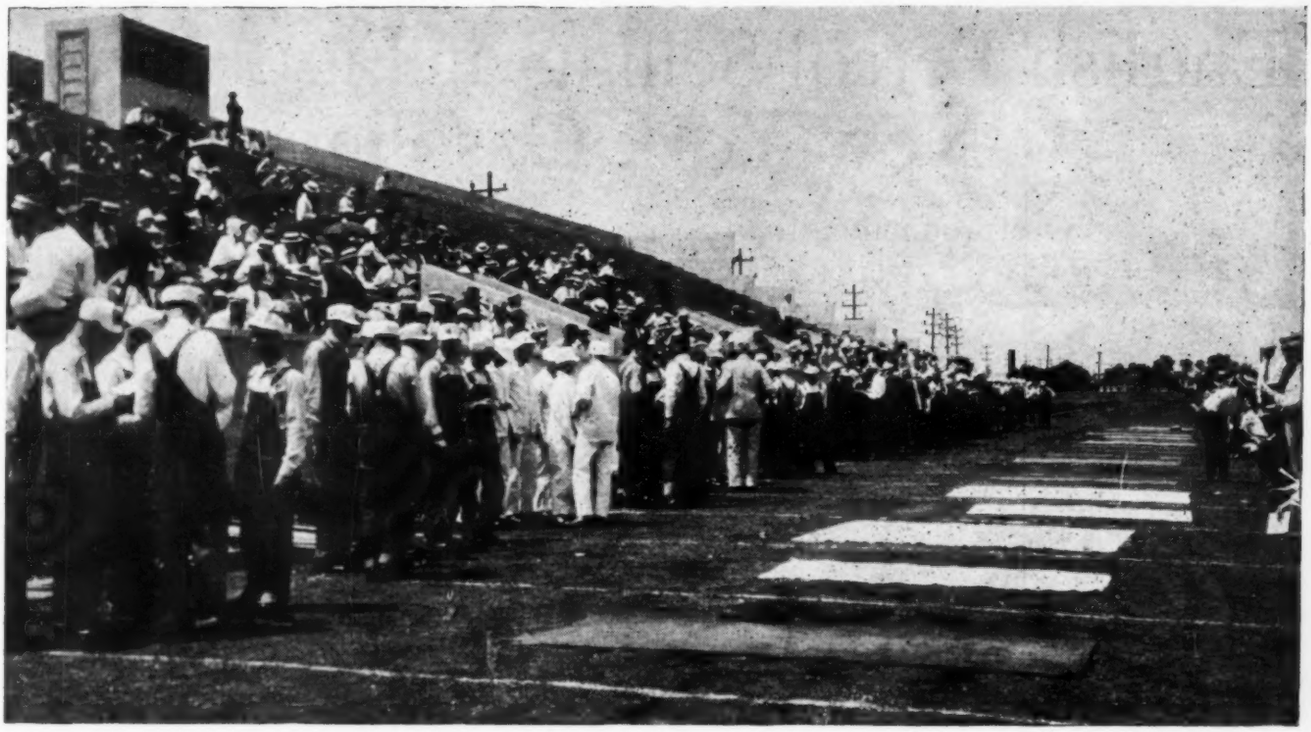
For the man in the field or in the refinery to secure the benefits of improvements provided by the engineering departments of the manufacturers providing the tools, they must be acquainted with those tools and their application. No better clearing house for this information could be provided, and at such small cost, than has been brought together in the exhibits of the manufacturers represented at the exhibition, supported as they are by the technical and educational exhibits provided by the management.

Clearly the manufacturers have done their part in thus making available the information every operator wants on the advances made in equipment. And clearly it is now up to the men in the Industry to make their further contribution to progress by informing themselves by attending the display of such equipment, made particularly more instructive through opportunity for comparison and the presence of engineers to discuss methods of application.

Demands continually being made upon the Industry to provide adequate supplies of oil at reasonable prices and with a minimum of waste of this valuable commodity, require close co-operation between those technically skilled in the recovery and handling of the supply and the engineers of the equipment manufacturers who so largely contribute to progress in the Industry proper. This gives the brief session of the annual exhibit at Tulsa great value in the opportunity it presents for such contact.

The Industry at large is indebted to the public spirited citizens of Tulsa who have sponsored and made possible this opportunity for advancement of the Industry through better knowledge of itself.

Every man who possibly can, owes it to himself and to the Industry of which he is a part, to spend some time at the Exposition.



SAFETY TEAMS READY FOR A CONTEST

Thirteen Teams Assured for First Aid Contest at Tulsa

TULSA.—The third annual first aid meet, under auspices of the safety Section of the Mid-Continent Oil & Gas Associatiion, will be held the first day of the International Petroleum Exposition, September 24.

Teams from producing, refining and natural gasoline concerns will compete for prizes, chief of which is the silver loving cup, donated by the exposition management. This cup was won in the first meet by the Phillips Petroleum Company from Burbank. The second year it went to a team from the Skelly Oil Company, also from the Burbank field.

There are 12 teams assured for the third meet, with the possibility that the list will be longer. In several instances competition within a company has been used for selecting the team to represent the company. The teams that come to Tulsa for the contest will have behind them an extensive training by representatives of the United States Bureau of Mines. This training has been provided by a score of men under the direction of C. J. Wakenhut, petroleum engineer, connected with the Bartlesville Experiment Station.

The concerns which are sure to have teams in the meet are: Humble Oil & Refining Company, Barnsdall Oil Corporation, Gypsy Oil Company, Sinclair Oil & Gas Company, Skelly Oil Company, Phillips Petroleum Company, Roxana Petroleum Corporation, Marland Oil Company, Empire Companies, Mid-Continent Petroleum Corporation, Continental Oil Company (Sapulpa refinery), Trans-Continental Oil Company, and the Louisiana Oil Refining Corporation.

Each team will consist of six men. The meet will be staged in the open air at the exposition grounds if weather permits. In case of unfavorable weather for outside work, the contest will be moved inside one of the buildings.

Prize Offers

Aside from the silver loving cup, which goes to the team gaining first place, the members of this first team will each receive a gold medal, as well as $20 in gold. Members of the second place team will each receive a silver medal and a first aid kit, the kits donated by the Mine Safety Appliance Company. Third place team members will each receive a bronze medal.

The chief judge will come from the Bureau of Mines. This man has not yet been selected. Other judges will come from the Mine Lnspection Department of Kansas. They are Walter Brennan, Charles Secombe, John L. Young, John Monahan, William Glennon, Martin Kotzman, John E. Edwards, John Petentler, Fred Skerbine, George J. Gruber and James Sherwood.

The meet is the result of work of the Safety Section of the Mid-Continent Oil & Gas Association, of which Don J. Wallace is drector.

Work for the contest wll be selected from the following problems, which have been provided to those contemplating entry.

Problems

Four contest problems will be selected from this list.

1. Rig builder falls, sustaining the following injuries: Simple fracture of right elbow; right big toe torn off, bleeding profusely; lacerated wound four inches long beginning one inch below left nipple and extending downward, moderate bleeding. Improvise blanket stretcher and lift patient ready for transportation. (Working time ten minutes)).

2. Houseman overcome by hydrogen sulphide gas; has been removed to fresh air; in state of shock, unconscious. Treat. Each man on team administer artificial respiratiion, rhythm not to be broken when men are changing places. (Working time seven minutes.)

3. Pipe rolls off pile and workman receives the following injuries: Compound fracture of left kneecap, not bleeding; simple fracture of rib one inch below nipple on right side, lacerated wound on forehead one inch above right eye, blood oozing; wound on little finger of right hand. Patient conscious but in state of shock. (Working time nine minutes).

4 Jerk line on tongs breaks, injur-

(Continued on page 114)

English Petrol Selling at Figure Near New York Gasoline

Overproduction in U. S. has weakened foreign markets while demand continues to increase

An Interview by Wallace Davis With Viscount Cowdray

TULSA.—"England and the European continent as a whole are feeling the effects of the overproduction of crude oil in the United States," Viscount Cowdray told the OIL WEEKLY in an interview Monday, following his arrival in Tulsa from the East Coast, where he came early in September from England.

In speaking specifically of his own country, he stated that the flood of crude now affecting a low market in America was having indirectly the same effect in England. Competition from large supplies of crude oil from various sources has run prices to a low mark in England, and he stated that petrol could be bought in London for almost the same price that gasoline is being bought in New York; a situation that is not pleasing, considering the fact of the imported product from abroad.

Refined Demand Increasing

"There is, of course, evidence of a growing demand for refined products in England, inasmuch as the number of motor vehicles is continually on the increase," Lord Cowdray stated.

The visiting nobleman called the present status of the oil industry in the United States an extremely regretable situation—regretable in that operators are having to contend with such a disastrous over-production. He believes the situation could reasonably well be alleviated if those interested in the industry could solve the production problem by co-operative restrictive means. If such a thing cannot be worked out to advantage, then he believes they must expect the State to step in and protect this valuable resource. He commended highly such an example as has just recently been put over in the West Texas country by W. S. Farish and the Humble Oil & Refining Company.

Lord Cowdray further explained the competitive situation confronting the industry in England: "There is the Persian supply now coming to England on top of the former imports from the United States and Russia. Persia is now a big shipper of crude to England, and although the production level has been held well in hand during the past two years there is roughly 100,000 barrels daily produced there. The price of Persian crude is largely determined by prices maintained in the United States, and naturally during such a period of depression now existing in the industry in the United States the value of Persian crude is materially struck." The Persian crude is much like the light grade Mexican crude, being around 26 and 27 Baume.

Loss From Overproduction

He intimated that while there is a very considerable increase in the amount of oil to be consumed in all European countries there is nothing but a loss to all concerned with the industry as an outgrowth of a situation like the present one.

Viscount Cowdray, while in the Mid-Continent and Southern territory, is the guest of E. DeGolyer, president of the Amerada Petroleum Corporation. Together they are leaving for a tour of the Mid-Continent and Texas fields within the week, the Seminole area being the principal field in Oklahoma to be visited.

The Viscount's firm is a substantial holder in the Amerada, Rycade and Mexican Eagle Oil Company, but does not own a controlling interest.

The visitor's immediate reason for coming to the United States was in the interest of the international polo match recently staged on Long Island. He is among the leading polo enthusiasts in England and is chairman of the polo committee of the Hurlington Club in that country, the governing body of British polo. Accompanying him are the Lady Cowdray, his daughter, Angela, and his son, John. They plan to sail from New York on their return to England late in September or early in October.

Fohs Finds Oil Not Associated With Sulphur in Sicily as in American Gulf Coast

Houston.—In contrast with conditions existing in the United States, the large sulphur deposits of Sicily have no important relation to the occurrence of oil. This was one of the interesting observations made by F. Julius Fohs, vice president of the Humphreys Corporation, who recently spent over two months studying the oil possibilities of Sicily, Italy, and Germany.

In the Gulf Coast region of Texas and Louisiana, where nearly 90 per cent of the world's supply is obtained, sulphur is found on the salt domes associated with oil and salt; but in Sicily the sulphur is in thick beds of gypsum and anhyrdite, while the oil possibilities are in a series of well defined anticlines.

In Italy Mr. Fohs visited the oil fields of the northern part of the country, where some small pools are producing near Parma. The Italian government, he says, is making every effort to develop the oil possibilities of both Sicily and Northern Italy, under the capable management of Prince Guilasio Castani, a big business man and engineer. All modern methods are being invoked, using German engineers to make geophysical studies. Mr. Fohs was accompanied on his Parma trip by the Italian governmental geologist, Dr. Mario Annelli.

In the Hanover district of Northern Germany, Mr. Fohs made a study of the salt deposits and domes and was enabled to see what the interior of a salt dome looks like. He also made a reconnoissance of the oil pools in company with Dr. Stoller, the chief German government oil geologist. The Haennigsen pool in the Hanover district is the most important one in Germany. It is the first pool in that country to have reached the deeper pay sands, although the drilling has not been nearly so deep as in some fields of the United States. The production in the Hanover district is on a paying basis, and Mr. Fohs believes that there are large undeveloped oil possibilities in the district.

Robert M. Ketchum, purchasing agent of the General Petroleum Corporation, has been elected president of the Purchasing Agents Association of Los Angeles.

C. R. Stewart, general superintendent of the Oklahoma-Kansas district for the Magnolia Pipe Line Company, with headquarters at Oklahoma City, visited the home offices of the company in Dallas late last week.

Program of the
International Petroleum Exposition
Tulsa, September 24 to October 1, 1927

SATURDAY, SEPTEMBER 24

Opening day of exposition: Producers' Day, Texas Day, Cosmopolitan Day.

Officers of the day—W. G. Skelly and Directors, H. N. Cole and Jacob France.

9:00 a. m.—Mayo Hotel: International Petroleum Congress.
9:00 a. m.—Opening of gates of International Petroleum Exposition.
12:00 noon—All exhibits open and ready for inspection.
1:30 p. m.—Official opening ceremony.
2:00 p. m.—Official opening of exposition by President Coolidge, using golden telegraph key used to open Alaskan railroad, Pan-American exposition and Tulsa Spavinaw water system.
3:30 p. m.—Annual safety and first aid meet. Mid-Continent Oil and Gas Association.
8:30 to 11:30—Dancing.

SUNDAY, SEPTEMBER 25

New York day, Chicago day, Natural Manufacturers' Association day, Optimists' day.

Officers of the day—Vice-President Alf G. Heggem and Directors G. A. Dye, Earnest B. Nicklos and John M. Lovejoy.

1:00 p. m.—Opening of exposition gates.
2:30 to 5:30 p. m.—Sacred band concert.
8:00 to 11:00 p. m.—Sacred band concert.
11:00 p. m.—Gates close.

MONDAY, SEPTEMBER 26

Louisiana day, Rotary Club, Chamber of Commerce day, Okmulgee day.

Officers of the day—Vice-President Frank Hinderliter and Directors A. C. Leonard, R. C. Sharp and J. Edgar Pew.

7:00 a. m.—Qualifying round, petroleum exposition golf tournament, Tulsa Country Club.
9:00 a. m.—Opening of exposition gates.
2:30 to 5:30 p. m.—Band concert.
3:00 p. m.—Old oil men's contest.
Recognition of pioneers in oil industry.
Presentation of Rockefeller medal to oldest oil man.
8:30 to 11:30 p. m.—Dancing.
11:30 p. m.—Exposition gates close.

TUESDAY, SEPTEMBER 27

Amarillo day, Borger day, Shawnee day, Seminole day, Logan County day, Natural Gas day.

Officers of the day—Treasurer James J. McGraw and Directors R. F. Garland, H. V. Foster and Waite Phillips.

8:00 a. m.—Golf tournament match play, Tulsa Country Club.
9:00 a. m.—Opening of exposition gates.
2:00 p. m.—Ladies' contests with typewriters and calculating machines.
2:30 to 5:30 p. m.—Band concert.
8:30 to 11:30 p. m.—Dancing.
9:30 p. m.—Aerial night fireworks display by Lieut. J. V. C. Gregory, pilot for Eagle Picher Lead Company.
11:30 p. m.—Gates close.

WEDNESDAY, SEPTEMBER 28

California day, Oklahoma City day, Dallas, Houston and Fort Worth day, Western Petroleum Refiners' Association day, Refiners' day, Civitan day.

Officers of the day—Secretary William Holden and Directors Walter Gray, A. A. Beard and Walter Miller.

8:00 a. m.—Golf tournament match play, Tulsa Country Club.
9:00 a. m.—Opening of exposition gates.
2:00 p m.—Demonstrations and instructions in safety and fire-fighting equipment.
2:30 to 5:30 p. m.—Band concert.
8:30 to 11:30 p. m.—Dancing.
11:30 p. m.—Gates close.

THURSDAY, SEPTEMBER 29

Wyoming day, Arkansas day, Transportation day, Transportation Club day, Bristow, Sapulpa and Cushing day, Oilton, Drumright and Osage day, Junior Chamber of Commerce day.

Officers of the day—Directors Robert W. Egan, J. M. Post, Clyde Pape and Ralph B. Pringle

8:00 a. m.—Golf tournament championship matches.
9:00 a. m.—Opening exposition gates.
Col. Charles A. Lindbergh's official visit—subject to change.
2:30 to 5:30 p. m.—Band concert.
8:30 to 11:30 p m.—Dancing.
11:30 p. m.—Exposition gates close.

FRIDAY, SEPTEMBER 30

Mid-Continent Oil and Gas day, Co-Operative day, Tulsa day, Bartlesville, Enid and Nowata day, Wichita day, Kansas day.

Officers of the day—Directors Ray L. Dudley, Clyde Alexander, C. P. Dimit and P. D. Hayes.

9:00 a. m.—Opening of exposition gates.
2:00 p. m.—Annual business meeting of Mid-Continent Oil and Gas Association, fifth floor, Cosden Building.
2:30 to 5:30 p. m.—Band concert.
3:00 p. m.—Tug-of-War contest.
7:00 p. m.—Annual banquet Mid-Continent Oil and Gas Association, Crystal ballroom, Mayo Hotel.
8:30 to 11:30 p. m.—Dancing.
11:30 p. m.—Gates close.

SATURDAY, OCTOBER 1

Marketers' day, West Virginia day, Scouts' and Geologists' day, Scientific and Technical day, Ohio day.

Officers of the day—Directors Warren C. Platt, J. S. Sidwell and J. M. Hayner.

9:00 a. m.—Opening of exposition gates.
2:30 to 5:30 p. m.—Band concert. Foot Ball game, Tulsa University vs. Parsons College of Fairfield, Iowa.
8:30 to 11:30 p. m.—Dancing.
11:30 p. m.—Gates close.

DIRECTORY OF EXHIBITORS AND MANUFACTURERS

Represented at

International Petroleum Exposition

Tulsa, September 24 to October 1

A

Advance-Rumely Thresher Co., Wichita, Kans....1-2-3 Pennsylvania Ave.
Geo. B. Allan & Co., Dallas.....124 Texas Bldg.
Allis-Chalmers Mfg. Co., Buffalo, N. Y.....77-78 Oklahoma Bldg.
Aluminum Corp. of America, New Kensington, Pa...10-11 Oklahoma Bldg.
American Car & Foundry Co., St. Louis.....50 Oklahoma Bldg.
American Fomon Company, Philadelphia.....33 Oklahoma Bldg.
American Tank Company, Tulsa.....Rail Line
Andrews Steel Company, Newport, Ky.....69 Texas Bldg.
Armstrong Bros. Tool Co., Chicago.....103 Oklahoma Bldg.
Armstrong Machine Works, Three Rivers, Mich.....125 Texas Bldg.
Atlas Lumnit Cement Co., St. Louis.....104 Oklahoma Bldg.
Atmore, Robert N., Co., Tulsa.....94-95 Oklahoma Bldg.
Automatic Electric, Inc., Chicago .....104 Texas Bldg.

B

B. & A. Specialty Company, Tulsa.....96-97-98-113-114 Oklahoma Bldg.
Baird Tool Works, Philadelphia .....14 Texas Bldg.
Barber Greene Company, Aurora, Illinois.....Lot C W. 15 x 30
Barco Manufacturing Company, Chicago .....88 Texas Bldg.
Barnsdall Corporation, Tulsa .....12-13 Oklahoma Bldg.
Barton, Manning & Warner Co., Alhambra, Calif.....19 Oklahoma Bldg.
Becker Specialty Company, Tulsa.....Platform of Rig
Bennett Pumps Company, Muskegon, Mich.....105 Oklahoma Bldg.
Bessemer Gas Engine Company, Tulsa.....Lot E W. 30 x 35, 10 x 30
Bethlehem Foundry & Machine Co., Bethlehem, Pa., 54 Oklahoma Bldg.
Billings & Spencer, Fort Worth.....83 Texas Bldg.
Binks Spray Equipment Company, Chicago.....92 Oklahoma Bldg.
Bovaird Supply Company, Tulsa.....25-26-27-28-29 Texas Bldg.
Braden Steel & Winch Co., Tulsa....79-80 Okla. and 132-133 Texas Bldg.
C. F. Braun & Company, Alhambra, Calif.....83-128 Oklahoma Bldg.
H. H. Breene Oil Field, Inc., Tulsa.....Lot B NW 15 x 20
The Bristol Company, Waterbury, Conn.....84 Texas Bldg.
Brooks Engineering Company, Los Angeles.....71-72 Oklahoma Bldg.
Brown Instrument Company, Tulsa.....37 Sci. & Tech. Bldg.
Brown Tool Company, Breckenridge, Texas.....133 Oklahoma Bldg.
Buckeye Traction Ditcher Company, Findlay, Ohio.....Lot H, 15 x 30
Buda Company, Harvey, Illinois .....67-68-69-70 Oklahoma Bldg.
Burt Corporation, Tulsa .....5 Texas Bldg.
Butler Portable Steam Hammer Company.....Lot M, 15 x 15

C

Cameron Tool & Supply Co., Cameron, W. Va.....27-28 Oklahoma Bldg.
C. F. Camp Company, Tulsa.....87-88-123-124 Oklahoma Bldg.
J. A. Campbell, Long Beach, California.....111 Oklahoma Bldg.
H. W. Cardwell, Wichita, Kansas.....Lot L, 15 x 20
Casey Hedges Company, Chattanooga .....81 Oklahoma Bldg.
Caterpillar Tractor Co., Peoria, Illinois.....Lot G E., 30 x 30
Celotex Company, Kansas City .....29 Penn. Ave.
Chaplin Fulton Mfg. Co. Pittsburgh, Pa.....40 Sci. & Tech. Bldg.
Chicago Bridge & Iron Works, Chicago.....2 Texas Bldg.
Chicago Pneumatic Tool Co., New York.....Lot J, 30 x 80
Clark Bros. Company, Tulsa .....Lot A, 30 x 80
Clear Vision Pump Company, Wichita, Kans.....108 Oklahoma Bldg.
Climax Engineering Company, Clinton, Iowa 130-131-132 Oklahoma Bldg.
Close-To-Nature Company, Colfax, Iowa..... Lot C, 9 x 15
Coen Company, Tulsa .....29 Oklahoma Bldg.
Coleman Motors Corporation, Littleton, Colo.....Lot K, SW 15 x 40
Creeper Wheel Company, Reading, Pa.....Lot E, E end 30 x 30
C. & G. Cooper Company, Mt. Vernon, Ohio.....Lot F, W 15 x 30
Crane Packing Company, Chicago .....Lot J, 30 x 80
Tim Cushing Tool & Supply Co., Bristow, Okla.....26 Oklahoma Bldg.

D

Dearborn Chemical Company, Chicago .....57 Oklahoma Bldg.
G. M. Davis Regulator Company, Chicago...39-55-56 Sci. & Tech. Bldg.
DeLaval Separator Company, Chicago.....16 Oklahoma Bldg.
DeVilbiss Company, Toledo, Ohio.....5 Oklhoma Bldg.
Devoe & Reynolds Company, Inc., Tulsa.....4 Oklahoma Bldg.
L. E. Dickson, Breckenridge, Texas.....1 Texas Bldg.
Dodge Electric Company, Tulsa, Okla. .....23 Oklahoma Bldg.
Dow Pump & Diesel Engine Co., Alameda, Calif.....37 Oklahoma Bldg.
Dunn Mfg. Company, Oxnard, Calif.....91-120 Texas Bldg.

E

Eagle-Picher Lead Co., Joplin, Mo.....59-60 Texas Bldg.
Economy Pump Company, Tulsa .....21 Texas Bldg.
Equipment Manufacturing Co., Tulsa.....15 Texas Bldg.
Eurit, Carl, and J. L. Miller.....8 Pennsylvania Ave.
Evansville Malleable Castings Co., Evansville, Ind.....8 Oklahoma Bldg.

F

Falk Corporation, Milwaukee, Wis. .....14 Oklahoma Bldg.
Federal Malleable Company, West Allis, Wis.....6-7 Texas Bldg.
Federal Supply Company, Tulsa .....128 Texas Bldg.
Fluor Construction Co., Tulsa .....40-41 Oklahoma Bldg.
Foamite-Childs Corporation, Utica, N. Y.....95 Texas Bldg.
Foos Engine Company, Springfield, Ohio.....Lot H, E 20 x 30
Ford Motor Company, Detroit .....Lot D, 30 x 40
Foxboro Company, Inc., Foxboro, Mass. .....5-6 Oklahoma Bldg.
France Packing Company, Philadelphia .....102 Oklahoma Bldg.

G

Garlock Packing Company, Palmyra, N. Y. .....30 Texas Bldg.
Gas Engineering & Construction Co., Tulsa.....4-5 Pennsylvania Ave.
Gaso Pump & Burner Company, Tulsa.....82-129 Texas Bldg.
General Electric Company, Schnectady, N. Y....76-77-134-135 Texas Bldg.
General Motors Truck Corp., Detroit .....73-74-75 Oklahoma Bldg.
General Woodwork Corp., Cincinnati.....Lot K, 15 x 20
Gilbert & Barker Mfg. Co., Springfield, Mass.....17 Texas Bldg.
Goulds Pumps Inc., Seneca Falls, N. Y.....84 Oklahoma Bldg.
Griscom Russell Company, New York.....42-43 Oklahoma Bldg.
Gulf Publishing Company, Houston ..... 10 x 10 Open Air
Gustin-Bacon Mfg. Co., Kansas City, Mo.....Lot J, 30 x 80

H

Halliburton Oil Well Cementing Co., Duncan, Okla.....Lot D, 20 x 30
C. M. Heeter Sons & Co., Inc., Butler, Pa.....9 Texas Bldg.
Hercules Motors Corp., Canton, Ohio..59-60-61-62-63-64 Oklahoma Bldg.
Highland Body Mfg. Co., Cincinnati, Ohio .....55 Texas Bldg.
Highland Body Manufacturing Company .....94 Texas Building
Highway Trailer Company, Edgerton, Wis.....67-68 Texas Bldg.
Hill, Hubbell & Company, Tulsa.....38-39 Texas Bldg.
Hinderliter Tool Company, Tulsa .....22-23-24 Texas Bldg.
Hollow, Geo. O. Tulsa .....52 Texas Bldg.
Hope Engineering & Supply Co., Mt. Vernon, Ohio.....Lot G, 30 x 50
Hopkins Motor Company, Tulsa.....Lot K, E 20 x 30 and 15 x 20
Hopper Winch Company, San Leandro, Calif.....Lot M, E 30 x 30
The Howards, Tulsa .....7 Sci. & Tech. Bldg.
Howell Valve Company, Kansas City, Mo.....35 Oklahoma Bldg.
Hudson Wire & Iron Co., Tulsa .....32 Texas Bldg.
Hutchison Engineering Company, Chicago.....6 Oklahoma Bldg.

I

Illinois Engineering Company, Chicago.....51 Texas Bldg.
Insulating Products Company, Chicago .....58 Oklahoma Bldg.
International Filter Company, Chicago.....49 Oklahoma Bldg.
International Harvester Company, Chicago..Lot K, E 20 x 30 and 15 x 20
Iverson Tool Company, Tulsa.....18 Texas Bldg.

K

Kemper-Thomas Company, Cincinnati .....8 Texas Bldg.
C. W. Kennard and R. A. Pickett, Madison, Kans.....Lot F, 5 x 15
Kennedye-Plumb Corp., St. Louis.....20 Texas Bldg.
Keystone Driller Company, Joplin, Mo.....85 Oklahoma Bldg.
Kohler Company, Kansas City .....20-21 Oklahoma Bldg.

L

Larkin and Company, Butler, Pa. .....34 Texas Bldg.
Leland Truck & Equipment Company, Tulsa.....53 Texas Bldg.
Leland Truck Equipment Company .....93 Texas Building
Linde Air Products Company, New York, 114-115-116-117-118 Texas Bldg.
Lufkin Foundry & Machine Co., Lufkin, Texas.....20 x 45 Open Air
Lunkenheimer Company, Cincinnati .....100-101 Oklahoma Bldg.

M

MacClatchie Mfg. Company, Compton, Calif.....110 Oklahoma Bldg.
Mack International Motor Truck Corp., New York....7-72-73 Texas Bldg.
Magneto Ignition Corp., Tulsa .....65-66 Texas Bldg.
Maloney Tank Mfg. Co., Tulsa .....85 Texas Bldg.
Manzel Brothers Co., Buffalo, N. Y.....51 Oklahoma Bldg.
Marland Refining Co., Ponca City.....24-25 Oklahoma Bldg.
Martin Wagon Company, Lufkin, Texas.....Lot C, 15 x 30
Mason Regulator Co., Boston, Mass. .....34 Oklahoma Bldg.
Merco Nordstrom Valve Company, New Orleans.....107 Texas Bldg.
Metric Metal Works, Erie, Pa. .....39-55-56 Sci. & Tech. Bldg.
Mid-Continent Map Company, Tulsa.....22 Oklahoma Bldg.
Mid-Continent Petroleum Corp., Tulsa.....44-45-46-47 Oklahoma Bldg.
Miller, J. L., and Carl Eurit.....8 Pennsylvania Ave.
Miller Combination Bailer & Pump Co., Sapulpa, Okla...57 Texas Bldg.
Miller, E. E., Fullerton, Calif. .....118 Oklahoma Bldg.
Miller Improved Gas Engine Co., Springfield, Ohio....Lot B, NE 19 x 40
Mine Safety Appliances Company, Pittsburgh.....86 Texas Bldg.

N

W. C. Nabors Company, Mansfield, La. .....12 Pennsylvania Ave.
National Brake & Electric Co., Milwaukee.....126-127 Texas Bldg.
National Meter Company, Chicago.....123 Texas Bldg.
National Petroleum News, Cleveland.....10 x 10
National Tank Company, Tulsa .....99-112 Texas Bldg.
National Tank Seal Co., Tulsa.....119 Oklahoma Bldg.
Neilson Mfg. Company, Tulsa .....10 Pennsylvania Ave.
National Turnbuckle Derrick Co., Tulsa.....89-90-121-122 Texas Bldg.
Neumeyer & Son, A. E., Tulsa.....55 Texas Bldg.
Newton Process Mfg. Co., Fullerton, Calif.....98-113 Texas Bldg.
Niles Tool Works Co., Hamilton, Ohio.....106-107 Oklahoma Bldg.
North American Tank Car Corp., Tulsa.....36 x 9 W end of Switch
Norval and Dial, Inc., Tulsa .....78-79-80-81 Texas Bldg.
Wm. W. Nugent & Co., Chicago.....19 Oklahoma Bldg.
R. D. Nuttall Company, Pittsburgh.....86 Oklahoma Bldg.

O

Oakite Products, Inc., New York....61-62 Texas Bldg.
Walter O'Bannon Company, Tulsa....103 Texas Bldg.
Ohio Steel Foundry Co., Springfield, Ohio....35 Texas Bldg.
Oil and Gas Journal, Tulsa....20 x 20
Oil Age Publishing Co., Inc., Los Angeles....36 Oklahoma Bldg.
Oil City Iron Works, Shreveport....4 Texas Bldg.
Oil Conservation Engineering, Cleveland....82-129 Oklahoma Bldg.
Oil Field Engineering, Los Angeles....116 Oklahoma Bldg.
Oil Well Improvement Co., Tulsa....87 Texas Bldg.
Oklahoma Engineering & Foundry Co., Muskogee....Lot D
Oklahoma Iron Works, Tulsa....55 Oklahoma Bldg.
Oklahoma Natural Gas Co., Tulsa....31 Sci. & Tech. Bldg.
Oklahoma Rig & Supply Co., Muskogee....56 Texas Bldg.
Oklahoma Steel Castings, Tulsa....46-47 Texas Bldg.

P

Pacific Oil Tool Company, Los Angeles....15 Oklahoma Bldg.
Parkersburg Rig & Reel Co., Parkersburg, W. Va....30 x 40
Parsons Company, Newton, Iowa....9 Oklahoma Bldg.
Peerless Supply Co., Tulsa....13 Texas Bldg.
Permutit Company, New York....34 Texas Bldg.
Petroleum Electric Company, Tulsa....76 Oklahoma Bldg.
R. A. Pickett & C. W. Kennard, Madison, Kans....Lot F, 5 x 15
Pittsburgh Equitable Meter Co., Pittsburgh....75 Texas Bldg.
Pittsburgh Steel Products Company, Pittsburgh....99-112 Oklahoma Bldg.
Wm. Powell Company, Cincinnati....126-127 Oklahoma Bldg.
Power Mfg. Company, Marion, Ohio....11 Pennsylvania Ave.
Power Plant Equipment Company, Kansas City....50 Texas Bldg.
Prairie Oil & Gas Co., Tulsa....100-101-110-111 Texas Bldg.
Pyle National Company, Chicago....42-43 Texas Bldg.
Pyrene Mfg. Company, Kansas City....134-135 Oklahoma Bldg.

Q

Quigley Furnace Specialties Co., New York....11-12 Texas Bldg.
Quimby Pump Company, Newark, N. J....½ of 56 Oklahoma Bldg.

R

Reading Iron Company, Reading, Pa....10 Texas Bldg.
Reading Steel Casting Co., Bridgeport, Conn....96-97 Texas Bldg.
Reedy Auto Truck & Trailer Co., Tulsa....Lot B, 11 x 20
Restigraph Company, Rochester, N. Y....32 Sci. & Tech. Bldg.
Refinery Supply Company, Tulsa....8 Sci. & Tech. Bldg.
Republic Truck Sales Corp., Alma, Mich....Lot L, SE 20 x 40
Rhoades Master Packing Company, Houston....17 Pennsylvania Ave.
Ridge Tool Company, Elyria, Ohio....16 Texas Bldg.
Ryan Equipment Co., Oklahoma City....Lot D
Ryan Motor Company, Tulsa....Lot D, 30 x 40

S

Scientific Research Association, Tulsa....26-27-28 Pennsylvania Ave.
Selden Sales & Service Co., Tulsa....92-93-94 Texas Bldg.
Shaffer Specialty Company, Tulsa....21 Pennsylvania Ave.
Shaffer Tool Works, Brea, California....93 Oklahoma Bldg.
Sherwin-Williams Company, Tulsa....53 Oklahoma Bldg.
Shreveport Chemical Company, Shreveport....23 Oklahoma Bldg.
Sivyer Steel Casting Company, Milwaukee....6-7 Texas Bldg.
Skelly Oil Company, Tulsa....38-39 Oklahoma Bldg.
Skinner Bros. Belting Company, Tulsa....58 Texas Bldg.
Smith Separator Company, Tulsa....102-109 Texas Bldg.
Snap-On Wrench Company, Kansas City....52 Oklahoma Bldg.
P. J. Sonner Gas Burner Company, Winfield, Kans....119 Texas Bldg.
Southern Mill & Mfg. Company, Tulsa....30 Oklahoma Bldg.

S

Selden Sales Company....Booths 53-54-55, Texas Building
Southwestern Engineering Co., Los Angeles....Lot F, 20 x 30
Spang & Company, Butler, Pa....108 Texas Bldg.
Specialty Oil Tool Company, Los Angeles....26 Oklahoma Bldg.
Spencer Trailer Company, Augusta, Kansas....54 Texas Bldg.
Spencer Trailer Company....92 Texas Building
Stanley Belting Company, Chicago....33 Texas Bldg.
Standard Lift Company, Memphis....Lot B, 10 x 20
Star Drilling Machine Company, Chanute, Kans....Lot C, E 30 x 35
Star Manufacturing Company, Oklahoma City..10 x 10 Open Air near rig
Staytite Company, Houston....65 Oklahoma Bldg.
Stearns-Roger Manufacturing Co., Denver....31 Texas Bldg.
Stefco Steel Company, Tulsa....Lot J, 30 x 80
Stoody Products Sales Company, Tulsa....44-45 Texas Bldg.
Sullivan Company, Memphis....48 Oklahoma Bldg.
Sullivan Machinery Co., Chicago....91-120 Oklahoma Bldg.
Sun Company, Dallas....6-7 Oklahoma Bldg.
Surface Equipment Company, Tulsa....16 Texas Bldg.

T

C. J. Tagliabue Mfg. Co., Brooklyn....3-4 Sci. & Tech. Bldg.
Taylor Instrument Companies, Tulsa....33-34 Sci. & Tech. Bldg.
Templeton, Kenly & Co., Chicago....19 Texas Bldg.
The Texas Company, Houston....17-18 Oklahoma Bldg.
Thrift Corporation, Houston....Lot F, 20 x 30
Timken Roller Bearing Co., Canton, Ohio....130-131 Texas Bldg.
Titusville Iron Works, Titusville, Pa....Display on band wheel of rig
Traction Machine Company, North Baltimore, O....Lot B, 10 x 20
Tulsa Boiler & Machinery Co., Tulsa....Lot M, 15 x 30

U

Union Machine Company, Bartlesville....Lot M, 15 x 15
United Carbon Company, Charleston, W. Va....1-2 Oklahoma Bldg.
United Iron Works, Tulsa....48-49 Texas Bldg.

V

Van Leer Spout Company, New York....109 Oklahoma Bldf.
Henry Vogt Machine Company, Louisville, Ky....36-37 Texas Bldg.

W

Waukesha Motor Co., Waukesha, Wis....89-90-121-122 Oklahoma Bldg.
Wailes Dove Hermiston Corp., New York....70 Texas Bldg.
Welders Supply Company, Tulsa....63-64 Texas Bldg.
Wellsville Fire Brick Co., Wellsville, Mo....½ of 56 Oklahoma Bldg.
West American Rubber Co., Los Angeles....115 Oklahoma Bldg.
Westinghouse Electric & Mfg. Co., East Pittsburgh..125 Oklahoma Bldg.
Westcott & Greis, Inc., Tulsa....39-55-56 Sci. & Tech. Bldg.
Whealton & Townsend, Inc., Los Angeles....Lot J, 30 x 80
Whitney Metal Tool Company, Rockford, Illinois....66 Oklahoma Bldg.
E. B. Wiggins, Los Angeles....117 Oklahoma Bldg.
J. H. Williams & Co., Buffalo....105-106 Texas Bldg.
Williamette Iron & Steel Works, Portland, Ore....Lot E, 30 x 30
Williamson Motors Corp., Tulsa....Lot L, 10 x 20
Wise & Schlegel, Tulsa....7 Pennsylvania Ave.
Worthington Pump & Machinery Co., New York....Lot L W 30 x 30

Y

Young Engine Corporation, Canton, Ohio....Lot L 10 x 20

Z

Zero Hour Torpedo Company, Tulsa....31 Oklahoma Bldg.

Companies Represented Through Exhibitors

A

Acme Fishing Tool Co., Parkersburg, W. Va....98 Oklahoma Bldg.
American Brass Company, Chicago....63-64 Texas Bldg.
Atkins & Company, E. C., Indianapolis, Ind....56 Texas Bldg.
Atlas Gypsum Company....104 Oklahoma Bldg.
Atlas Portland Cement Company....104 Oklahoma Bldg.

B

Baker Casing Shoe Co., Huntington Park, Calif....113 Oklahoma Bldg.
Baker Chemical Company, J. T., Phillipsburg, N. J....14 Texas Bldg.
Barrelt Machine Company, Pittsburgh, Pa....124 Texas Bldg.
Belser, Geo. N....Lot B, Open Air
Bruce MacBeth Gas Engine Co., Cleveland....14 Texas Bldg.
Buffalo Meter Company, Buffalo....14 Texas Bldg.

C

Chicago Steel Foundry....Lot B, Open Air
Cleveland Pneumatic Tool Co., Cleveland....56 Texas Bldg.
Columbian Steel Tank Co., Kansas City....56 Texas Bldg.
Corning Glass Works, Corning, N. Y....14 Texas Bldg.
Crosby Steam Gauge & Valve Co., Boston....29-55-56 Scientific Bldg.

D

Deming Pump Company, Salem, Ohio....102-109 Texas Bldg.
De Sota Foundry & Machine Co., Ltd., Mansfield, La. ....12 Penn. Ave.
Detroit Hoist & Machine Company....25-29 Inc. Texas Bldg.
Duff Manufacturing Co., Pittsburgh....83 Texas Bldg.

E

Electric Controller & Mfg. Co., Cleveland....76 Oklahoma Bldg.
Electric Machinery Manufacturing Co., Minneapolis...76 Oklahoma Bldg.

F

Fisher-Governor Company, Marshalltown, Iowa....102-109 Texas Bldg.
Fluid Packed Pump Co., Los Nietos, Calif....94-95 Oklahoma Bldg.
Fortier Manufacturing Company....119 Oklahoma Building
Fuller Machine & Forge Works....94-95 Oklahoma Bldg.

G

Grant Oil Tool Company....36 Oklahoma Bldg.

H

Hays Corporation, Michigan City, Ind....14 Texas Bldg.
Hazard Manufacturing Co., Wilkesbarre....25 and 29 Inc. Texas Bldg.
Hobbs Manufacturing Co., Ft. Worth....56 Texas Bldg.
Hurley Gasoline Company....98-113 Texas Bldg.
Hydraulic Press Manufacturing Co., Mt. Gilead, O....96-97 Texas Bldg.

I

Imperial Brass Mfg. Company, Chicago....63-64 Texas Bldg.

L

Leidecker Tool Company, Marietta, Ohio....25-29 Texas Bldg.
Leavitt Machine Company, Orange, Calif....97 Oklahoma Bldg.

M

A. J. McEwan Company....35 Oklahoma Bldg.
Martin-Loomis Corporation....36 Oklahoma Bldg.
Meriam Company, Cleveland....14 Texas Bldg. and 39-56 Sci. Bldg.
Missouri Paint and Varnish Company....119 Oklahoma Building
Modern Engineering Co., St. Louis....63-74 Texas Bldg.

N

New Way Motor Company....87-88-123-124 Oklahoma Bldg.
Nixdorf Krein Mfg. Co., St. Louis....56 Texas Bldg.
Northern Pump Company, Minneapolis....102-109 Texas Bldg.
Northwestern Mfg. Co., Milwaukee....44-45 Texas Bldg.

O

Oil Well Accessories Company....Lot B, Open Air

P

Petroleum Appliance Company, Los Angeles....55-39-56 Sci. & Tech Bldg.
Purox Company, Denver....44-45 Texas Bldg.

R

Reed Air Filter Company, Louisville, Ky....102-109 Texas Bldg.
Reid-Avery Company, Philadelphia....63-64 Texas Bldg.
Richart Perforating Company....36 Oklahoma Bldg.
Robinson Orifice Fitting Co., Los Angeles....114 Oklahoma Bldg.
Rock Island Plow Company, Rock Island....87-88-123-124 Oklahoma Bldg.
Rotary Supply Company....36 Oklahoma Bldg.

S

Scullin Steel Company....87-88-123-124 Oklahoma Bldg.
Simplex Wire & Cable Company, Chicago....63-64 Texas Bldg.
Spang, Chalfont & Co., Inc., Pittsburgh....25-29 Texas Bldg.
Sray Gas Burner Company....Lot B, Open Air
Stacy, E. C., Tiffin, Ohio....56 Texas Bldg.
Steubing Cowan Company, Cincinnati....96 Oklahoma Bldg.

T

Trailmobile Company, Cincinnati....56 Texas Bldg.
Trumble Gas Trap Co., Los Angeles....87-88-123-124 Oklahoma Bldg.

U

U. S. Light & Heat Corp., Niagara Falls, N. Y....63-64 Texas Bldg.
U. S. Gauge Company, New York....63-64 Texas Bldg.

V

Victaulic Company of America, New York....102-109 Texas Bldg.
Viking Pump Company, Cedar Falls, Iowa....103 Texas Bldg.
Vulcan Soot Cleaner Company, Dubois, Pa. ....124 Texas Bldg.

W

Wagner Electric Corp., St. Louis....76 Oklahoma Bldg.
Wright Austin Company, Detroit....14 Texas Bldg.

Dale Field's Fourth Well Is Largest Producer

Houston.—Coming in as the fourth and largest producer of the new serpentine field at Dale, Clingingsmith 2 of The Texas Company and Humble Oil & Refining Company was completed Monday morning of this week at 2089 feet, making 360 barrels of 39 gravity pipe line oil during the first hour, or at the rate of 8,600 barrels daily. This rate was not maintained long, however, the yield for the first 18 hours being 1890 barrels.

This well is located about 400 feet east of the discovery well, The Texas Company's Beaty 1-A, which was brought in August 5, 1927, making 265 barrels on the pump, pumping around 57 barrels a day.

The second well completed was the Sun Oil Company's Tally 2, which came in last week, making 35 barrels The third well was The Texas Company's Beaty 2-A, 300 feet south and east of the discovery well, completed Saturday for 600 barrels of pipe line oil from 2026 feet.

The Texas Company completed two tests as failures, Lackey 3, abandoned at 2181 feet, and Clingingsmith 1 on the tract held jointly by The Tex Company and Humble Oil & Refining Company. This test was 300 feet northwest of the Clingingsmith 2. Another test abandoned was Murchison's Copeland 1, which had been carried to 2652 feet, penetrating the Edwards lime 75 feet.

The Texas Company's Lackey 1 was preparing to drill in Tuesday with the top of the serpentine at 2011 feet. The Lackey 2 was a derrick. Beaty 1-B was in chalk at 2267 feet, and Clingingsmith 3, owned jointly by The Texas Company and Humble, was ready to be put on the pump, with prospects of making a well from 1980 feet.

Humble Oil & Refining Company is putting down three tests on the Clingingsmith lease which runs parallel with the Texas-Humble Clingingsmith lease, bordering it on the northeast. Humble's Clingingsmith 1 was drilling around 1000 feet Tuesday, Clingingsmith 2 at 500 feet, and No. 3 was setting up.

Buchman et al's Taylor 1 was drilling late last week at 2110 feet in shale. Weinert et al's Taylor 1 was a derrick. Magnolia's Taylor 1 was drilling in shale at 2025 feet. Atlantic-Morgan's Moore 1 was shut down at 2022 feet in chalk, and the Atlantic-Morgan Ostien 1 was 2114 feet deep with 250 feet of fluid in the hole.

A.P.I. Committee Agrees Upon Conservation Plan

Denver, Colo.—Committee of seven appointed by American Petroleum Institute to agree upon some plan for conservation of oil and gas ended a three-day session at Colorado Springs September 14. Committee is said to have agreed upon a general plan to be presented at the general meeting of the Association in Chicago in December. Report is said to confine itself to ways and means for the economical production of petroleum and natural gas. A subcommittee of lawyers was appointed to devise methods for the use of the industry in effort to avoid some of the evils arising from the present leasing and royalty practices now obsolete.

I. B. Humphreys of Denver, president of the Humphreys Corporation, is in Houston.

Gulf Publishing Company Announces New Building

BELOW is a perspective of the new home of the Gulf Publishing Company, contract on which was awarded on Tuesday of this week.

This building will house on the second floor, the editorial, circulation, advertising and business offices of the company, which owns and publishes *The Oil Weekly, The Refiner and Natural Gasoline Manufacturer,* and *The Petroleum Marketer.* The printing plant in which these journals are printed, and in which petroleum books printed by the company, are handled, will be on the ground floor.

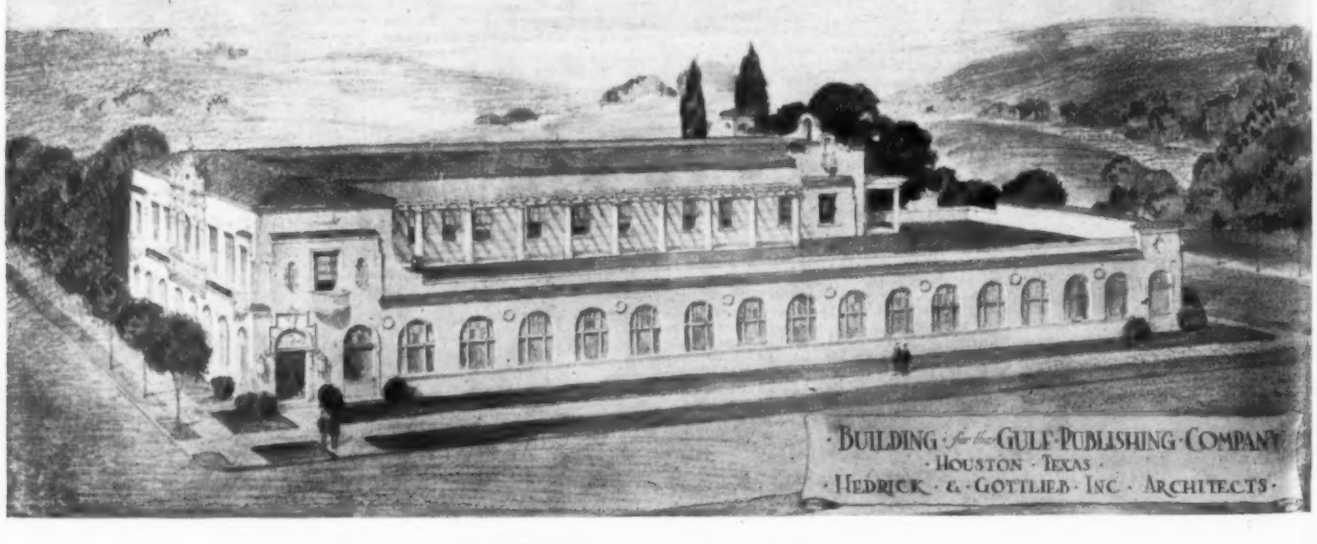
Built of reinforced concrete, and tile throughout, the structure will be absolutely fireproof. The building pictured below will be the first unit of a series of buildings which will eventually cover the entire block owned by the company on Buffalo Drive, one of Houston's scenic boulevards. It will be 166 by 70 feet, two stories in height.

Construction will start within a few days.

It will be located on a slight elevation, on a curve of the drive, about two miles from the center of the business section, but, due to the fact that there are but two street intersections between the plant site and the down town section, it is only a four and a half minutes drive from the heart of town by automobile.

The block on which it is located has 467 feet frontage on the drive, and is faced by a city-owned parkway, which extends from the downtown section along Buffalo Bayou to the River Oaks Country Club.

In designing the structure, the architects have used the Spanish type in its entirety.



Deep Sand Completions Boost Seal Beach Output

Completion of 13 wells, one the largest in the field sends production past 70,000 barrels with prospects of going higher

By BRAD MILLS
Staff Representative

LOS ANGELES.—Bolstered by the largest completion in the history of the field, and with a dozen other large wells completed for good measure, the Seal Beach field has again forged its way past the 70,000-barrel mark. The deep sand in the Alamitos Heights sector was responsible for the latest increase. Wells headed for the Wasem zone have reached their destination in clusters. Production is now within 6,000 barrels of the old peak established three months ago and has a good chance of eclipsing the old mark if the many wells now nearing the deep sands prove as productive as their predecessors.

The main Seal Beach field remains quiet, with only a few wells drilling for the Selover sand and none headed for the deeper zones. Development in this sector has been very conservative. The area is exclusively controlled by the Associated Marland and Standard.

The Townlot area has pushed its production to almost 50,000 barrels. Of the total output, less than 6000 barrels is being produced from the Selover sand, which caused the first upset. Fully a dozen wells are due for completion during the week, and upon their success largely depends the field's chance for a new record.

The Marland Oil Company broke all existing records in the field with the recompletion of McGrath & Selover 13. The well was recompleted at 5360 feet with an initial production of 5100 barrels. It had all the earmarks of a real gusher and is still flowing at close to its initial rate. Climaxing a series of large completions in both the upper and lower sands in the townlot district, the latest producer brought the company's total production to almost 25,000 barrels.

The Petroleum Securities Company, subsidiary of the Pan-American Petroleum Company, jumped into the select class with four large completions in the deeper sands, the largest of which was Naples 7. The well was recompleted as a 3800-barrel producer, but the company would not divulge the depth. The oil was 29.1 gravity and very clean, having shown a cut of only one-tenth of one per cent. Other completions by the company were Williams 1, with a production of 2000 barrels; Nicholson 1, a 1000 barrel producer, and Bryant A-4, which had an initial production of 1100 barrels. The company would not disclose the depths of any of the producers, but they supposedly were completed in the Wasem sand near the 5350-foot level.

The California Eastern Oil Company was fortunate enough to get both gas and oil in Judson 3, which was deepened to the Wasem sand. The initial test showed a production of 2600 barrels of oil and considerably more than 3,000,000 cubic feet of gas. Drilling was stopped at 5400 feet. The oil was 30 gravity and practically clean.

The Travis Drilling Company also sprang a surprise with the completion of a good combination oil and gas well. Its No. 1 produced 2000 barrels of oil and nearly 10,000,000 cubic feet of gas on the initial test from a depth of 5400 feet. The oil was 29.2 gravity and cut less than one per cent. It is significant to note that the wells producing the most gas also produce the highest gravity oil. Their production fluctuates more, however.

It seems that ground water has been found beneath the Wassem sand in some of the recent deep completions. All of the companies have been somewhat reticent in announcing discoveries in the lower sands, but it has been definitely learned that it was necessary to plug back for production in at least two wells during the past week. The bottom of the Wasem sand, or at least the water level, was found at 5575 feet. By pluging back, good wells resulted.

The Pan-American Petroleum Company has had a good oil showing near 2600 feet in its State 1, on the Rincon structure. The well is located in the edge of the ocean and supposedly near the center of the structure. The company only recently acquired holdings on this wildcat structure. The well is west of the Chanselor-Canfield Midway Oil Company's Hobson wells, which have shown signs of oil but failed to produce.

Resume at Potrero

The Associated Oil Company has resumed its spasmodic operations at Potrero, where its Cypress 1 has been shut down for several months. The well responded to cleaning out operations with intermittent flows of mud, water and oil.

Goleta

The Goleta field, famous in the early spring for its high gravity oil and shallow producing sand, has not cut the wide swath in California oil circles that it promised during its infancy. Extremely high gravty crude at a depth of only 1500 feet was somewhat of a novelty in California and attracted its full share of attention. Many operators openly expressed the belief that the next upset in California would be caused by an over-production of light oil from the Goleta district. The first wells were completed with an initial production of more than 500 barrels of 42 gravity oil. It was soon found, however, that they could not be depended upon to produce consistently. E. J. Miley, discoverer of the field, has drilled 10 wells, but his present production is negligible. The pressure has declined rapidly and water encroachment has played havoc with many wells. The Miley interests are drilling a deep test to bolster up the waning enthusiasm but nothing of importance has been found above 5350 feet. Other companies, attracted by the early completions, have attempted to extend the field, but without success.

Midway District

The Standard Oil Company has completed two small wells in the Midway district, practically bringing its new work in the immediate area to an end. They were No. 44, section 29-31-24, and No. 70, section 17-32-24. The former was a 150-barrel producer at 4605 feet and the latter was completed at 3605 feet as a 50-barrel well. Water developed in No. 70 and it was plugged back to 3550 feet. The company is arranging to drill and deepen C-5, section 5-32-23, which was stopped soon after spudding. The North American Consolidated Oil Company has No. 12 ready for completion at 4215 feet and will make a test as soon as the oil string is set. The water shut-off with the 8¼-inch casing was accomplished at 4125 feet. The Midway district is less active than at any time during the past year. The majority of the wells are idle for one reason or another.

Sunset

The Union Oil Company fell far below expectations in the completion of Whittier-Kent 1, section 10-11-23, in the Sunset field. The well was carried to 5305 feet, but produced less than 50 barrels on the initial test. The cost of the well called for a much larger production and the completion was a distinct surprise, since the neighboring wells have produced upward of 300 barrels. Three strings of casing were necessary, adding greatly to the cost.

Ventura

Production in the Ventura field seems destined to stay below the 60,-

000-barrel mark for some time, despite the completion of several good wells and the wide open policy recently inaugurated by the three principal producing companies. An opening of the old wells caused an increase of slightly over 10,000 barrels. In view of the fact that the actual drilling time of a well in the field is 200 days or more, any increase in production is expected to be brought about slowly.

G. J. Magenheimer, independent operator, who failed to make a producer of Hartman 1 at 6475 feet, continues to have hard luck in the deepening process. The well is now drilling at 6730 feet and has failed to develop a saturated sand. The test will be carried below 7000 feet if necessary.

The Associated Oil Company is completing Hartman 6 at 6327 feet. No production test has been made, however.

The Bolsa Chica Oil Corporation has encountered an unusually hard streak of shell and sand at 4550 feet in Hartman 3 and has been able to make only a few feet of hole daily. It probably will be several weeks before the well is completed.

Piru District

Some new development is promised in the Pirue district, through the leasing of the Hidden ranch, section 5-4-18, to the Bolsa Chica Corporation. The lease is located on the Temescal anticline. The company will immediately start a well on its new holdings.

The Leonard Oil Company has been forced to run another string of casing to shut off the water at 3000 feet in its well on section 3-4-18. A string of 8¼-inch casing recently was cemented at 2925 feet to take care of a troublesome water situation. The company had wished to make it the final water string but found it necessary to run the 6¼-inch to the lower zone.

Brea-Olinda

The Shell Company's deep test, Puente A-2, in the Brea-Olinda district, is beginning to show considerable promise, after several hundred feet of rather disappointing formation. A hard, brown shale was cut at 5500 feet and a careful test disclosed a nice showing of oil. Drilling is continuing at 5515 feet. The Union Oil Company is drilling two wells in the immediate district, one of which is below 5000 feet and the other slightly shallower. Both are encountering a hard shale, which has failed to disclose anything of importance.

The Shell's Pico 5, which was a recent completion at 5520 feet, has failed to produce consistently. The well was plugged back to 5275 feet, but persists in making considerable water with a low gravity oil.

Richfield

Production in the Richfield district remains steady, with few completions to increase the present output. The Standard's Son-Crail-Lock 1 has settled to 150 barrels. The oil is abo 16 gravity and cuts only four per cent. George W. Johnson has abandoned Swain 1 at 4750 feet, after drilling through a series of gray sands. Previous operations in the field have branded the gray streaks as hopeless. The General Petroleum Corporation has completed Thompson 10 as one of the best wells of the year. The well was finished at 4625 feet with an initial production of 550 barrels. The crude is 24 gravity and shows a cut of only one per cent. Production is holding up well toward the initial figure.

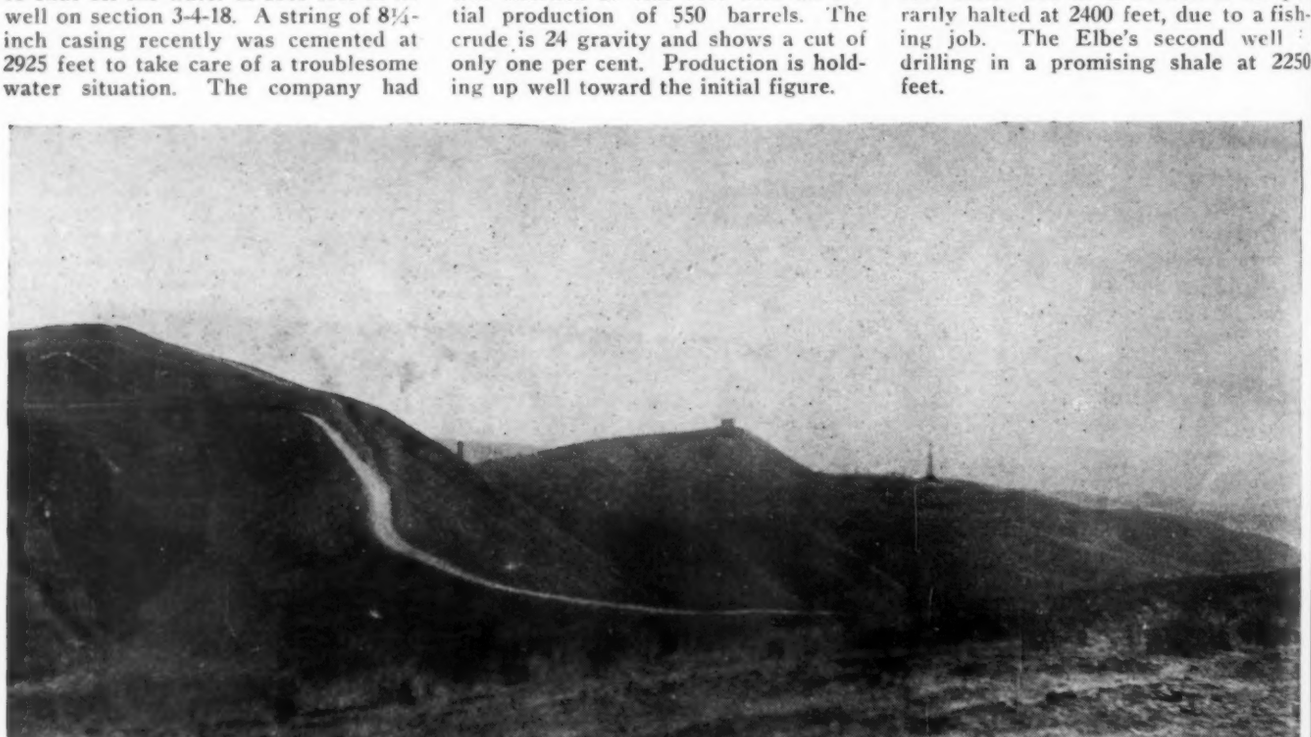
Huntington Beach

Huntington Beach is another California field that is having a difficult time maintaining its production, although, next to Seal Beach, it is the busiest area in the State. The size of the completions have been varying from a few barrels to more than 1000 barrels, but have averaged much less than a few months ago. The natural decline is working slowly, particularly among the shallow wells. The deeper wells are holding up very creditably. The Standard Oil Company has a brand new combination well in Bolsa 30, which has been completed at 3590 feet as a 75-barrel oil well and a 5,000,000 cubic foot gasser. The oil is comparatively clean.

Gene Hall's Marah 5, which was a recent 1000-barrel completion, is demonstrating its tenacity by holding up well towards its initial output. The well is an unsual one and the largest completed for some time.

Round Mountain

Late developments in the Round Mountain field have been disappointing, in view of the fact that the St. Helens Petroleum Company and the L. & B. Producing Company have failed to find a pronounced oil sand and the Elbe Oil Company has been forced to go below the objective formation for results. The St. Helens well is unmistakably lower on the structure than the Elbe discovery well and still has a chance of finding a good sand. The well is now drilling below 2300 feet. The L. & B. well is temporarily halted at 2400 feet, due to a fishing job. The Elbe's second well is drilling in a promising shale at 2250 feet.



ROUND MOUNTAIN STRUCTURE

Water Intrusion Changes Opinions On Yates Field

By H. H. KING
Staff Representative

SAN ANGELO—The potential crude market threat offered by the Yates shallow oil field was minimized somewhat during the past week by the early appearance of sulphur water in three flowing wells on the Pecos River side of the structure. The first attack of water in the field came Saturday when Gulf Production Company's Thompson 1, which was completed September 13, making 600 barrels clean oil hourly from big lime pay at 980 to 988 feet, developed 20 per cent water while pinched to about 40 barrels hourly with 400 pounds back pressure. The water gradually increased to about 30 per cent of the allowed production, and the well had to be shut in pending the erection of a water separator to be hooked up to the flow lines.

The shutting in of Gulf's well did not halt the intrusion of water on the oil pay, as flowing wells located nearer the field proper began making emulsion Sunday.

Allsman-Bell's river bed well, a diagonal offset to Gulf's producer, showed cut oil while flowing 90 barrels daily through 2½-inch tubing, while Marland Oil Company's Yates 1 "A," a west offset to the river bed producer, gauged 735 barrels fluid, including 7 per cent water, via five-sixteenth-inch choke, with 400 pounds back pressure. Mid-Kansas and Transcontinental's Yates 3 "B," located north of Marland's well and also on the west bank of the river, had not developed water trouble Sunday, although being allowed to flow via small lines between 2000 and 3000 barrels daily. This well is slightly higher on the structure, as compared to the other three nearby producers.

The original theory that the Yates field is one big structure, or dome with water on the flanks pushing the oil and gas ahead, is now giving way to the opinion that the producing area is made up of a series of highs separated by synclines, with probable small oil wells or water wells in the low spots. It is on the same regional high that furnishes big wells in Crane and Upton Counties, with a gradual rise to the south.

Completed wells located at high points on the Yates structure are not expected to develop water trouble until drainage takes sufficient quantities to draw the water in, but care will be exercised in the future on flowing big wells without carrying a reasonable back pressure on the flow lines. The placing of back pressure on big wells in the field will automatically hold down the high daily output that was credited to the field.

Gulf's Thompson 1 was reported last week as having registered an initial output of approximately 600 barrels of pipe line oil per hour September 13, after drilling eight feet in the lime horizon encountered at 980 feet, with oil showing from sand formation at 935-80 feet. The well was pinched to about 30 barrels hourly after making this heavy flow, and when given an open flow gauge Thursday made 600 barrels during the first hour and 530 barrels on the second hour without showing water. Production was again pinched to about 30 barrels hourly owing to limited storage and pipe line facilities. The appearance of water several days later was somewhat of a surprise, and probably would have shown up earlier had the well been allowed to flow its maximum.

Gulf is preparing to install back pressure traps somewhat similar to that used in handling big wells in the Mexican fields, where water is produced in large quantities by edge wells and after drainage has taken place, and most of the water will be drawn off as the oil is produced.

The appearance of water in the Crockett County extension was followed shortly afterward in the Pecos River bed offset producer, which is owned by Allsman-Bell et al. This river bed well has been flowing about 90 barrels daily from 100 feet of saturated pay at a total depth of 1070 feet, or almost 82 feet lower on total depth than Gulf's well, and Saturday began making about 4 per cent water and b.s.

Lease owners in the Yates field, with only a few exceptions, have made signed agreements to adhere to the proration plan suggested by Humble to confine their output to pipe line outlets, and an open flow gauge of each well in the field is supposed to be taken on or about October 1 to determine the amount of oil to be run by Humble and the Illinois Pipe Line Company from each well.

The joint property of Mid-Kansas & Transcontinental in the Yates field was partially opened up late last week as result of the completion of storage tanks at the Hurdle farm, near McCamey. Illinois Pipe Line Company transported from the above property via an eight and a six-inch line during the 24-hour period ending Saturday morning, 12,375 barrels to Hurdle and 5030 barrels to Humble at McCamey. On the following day, the deliveries to McCamey was reported at 5260 barrels and 13,845 barrels to tanks at Hurdle.

The volume of shut-in production in the Hendricks field, Winkler County, is rapidly mounting, and early this week the field was credited with having 21 tests shut down on top of the big lime, which is within several hundred feet of the oil and gas producing horizons. Fourteen tests were drilling, and derricks and rigs under way totaled 14, while five locations are being carried on current field reports. The nine completed oil wells in the field registered a combined initial flow of 23,395 barrels, and were being allowed to produce 11,075 barrels daily. The daily output was materially increased Saturday when the jointly owned well of Murchison Oil Company, Cranfill Brothers Oil Company and Marland Oil Company was given a pipe line connection by the American Petroleum Company, which has a six-inch line extending to tank farm and car rack on the T. & P. Railroad. This well gauged 1500 barrels during the first 16 hours, and was holding at 90 barrels hourly. The well is expected to increase its output when flowed open for a few days, as baroid was put in the hole to hold down the gas pressure while drilling in with rotary, and several days of open production will be required to flush the hole. American contracted to take 2500 barrels daily from this well.

The status of field operations in the Hendricks field, Winkler County, at the close of last week is shown below:

Operators—	Locations	Dks. and Rigs	Drilling Tests	Shut Down on Lime	Completed Wells	Initial Prod.	Present Prod.
Amerada Petroleum Corp.	..	1	..	..	..	....	....
Arizona Mining and Engineering Co.	..	1	..	..	..	....	....
Atlantic Oil Prod. Co.	..	..	1	1	..	....	....
Cranfill-Reynolds, et al	..	1	..	1	..	....	....
Gulf Production Co.	..	1	..	5	1	4,500	*725
Humble Oil & Refining Co.	..	..	1	2	.	....	....
Independent Oil & Gas Co.	..	..	1	2	1	50	25
Landreth Production Corp.	..	..	2	1	..	....	....
Liner Drilling Co., et al	..	1	..	..	..	....	....
Ma land Oil Co.	2	2	..	..	..	....	....
Maxwell & L. C. Turman	1	1	..	..	..	....	....
Murchison-Cranfill & Marland	1	2	..	..	1	5,000	*2,000
Murchison-Cranfill	..	1	..	..	..	....	....
Pure Oil Company	1	..	1	2	1	5,500	*995
Republic Production Co	..	..	2	..	..	....	....
Roxana Petroleum Corp.	..	..	2	..	..	....	....
Southern Crude Oil Purchasing Co.	..	2	2	6	5	8,345	*7,330
Texon Oil & Land Co.	..	1	2	1	..	....	....
Totals	5	14	14	21	9	23,395	11,075

*Production partially pinched.

Committee of Seven Will Secure Technical Data

Full investigation of function of natural gas in production of oil arranged for in meeting of Marland committee at Colorado Springs

By GRADY TRIPLETT
Staff Representative

COLORADO SPRINGS, Colorado.—In an effort to determine the function of natural gas in the production of oil, the committee of seven of the American Petroleum Institute, meeting here September 11 and 12, named a sub-committee of production engineers, who will gather the data through other regional committees.

All this was combined in a resolution, which summed up the accomplishments of the Colorado Springs meeting.

The committee of seven will meet again October 18 in Ponca City to consider findings of the technical subcommittee. The subcommittee will meet there two days previous in order to put its report in shape for submission.

Members of the committee present here were E. W. Marland of the Marland Oil Company, Ponca City, chairman; Sid H. Keoughan of the Continental Oil Company, Denver; Henry McGraw of the Gypsy Oil Company, Tulsa; L. P. St. Clair of the Union Oil Company, Los Angeles; J. Edgar Pew of the Sun Company, Dallas; and Wallace Pratt of the Humble Oil & Refining Company, Houston, representing W. S. Farish, committee member. Thomas A. O'Donnell, the other member of the committee, was not present, being in Europe.

Others attending were E. W. Clark, president of the American Petroleum Institute; R. L. Welch, general counsel of the American Petroleum Institute; George Marland of the Marland Oil Company; W. A. Moncrief of the Marland Oil Company; Earl Oliver, petroleum engineer of Ponca City; Max W. Ball of the Argo Oil Company, Denver; M. E. Lombardi of the Standard Oil Company of California, San Francisco; John R. Suman of the Humble Oil & Refining Company, Houston; James York of the Texas Company; F. W. Freeman of The Texas Company; W. H. Ferguson of the Continental Oil Company; E. T. Wilson of the Continental Oil Company, and James Duce, State oil inspector of Colorado.

Subcommittee

The technical subcommittee appointed to gather data and present at the October 19 meeting in Ponca City consists of M. E. Lombardi of the Standard Oil Company of California, for the West Coast area; Max W. Ball of Denver for the Rocky Mountain area; John R. Suman for the Texas and Louisiana area; W. P. Housman of Ponca City for the Oklahoma and Kansas area Earl Oliver of Ponca City is secretary for this committee.

Each of these men will gather information through committees within his territory and compile the data for presentation at Ponca City.

In addition to the technical subcommittee a similar committee was named to restudy existing forms of oil and gas leases in an effort to find revisions allowing simpler royalty payment where royalty owners are numerous and where royalty interest becomes subdivided in area. This subcommittee consists of James A. Veasey of the Carter Oil Company of Tulsa; D. A. Richardson of the Marland Oil Company of Ponca City, and Rush Greenslade of the Gypsy Oil Company of Tulsa.

The resolution adopted here creating the technical subcommittee follows:

Resolution

Whereas, this committee has been created by the American Petroleum Institute and charged with the duty of devising and suggesting to the board of directors of the institute such measures as will enable the industry, while continuing to meet the consumption requirements for petroleum and its products, to conserve in its natural state such reserves of petroleum as may not then be required for consumption;

And, whereas, this committee's recommendations should be based on all the technical and scientific data that can be made available to it,

Now, therefore, be it resolved, That the chairman of this committee be, and is hereby authorized and directed to appoint or obtain the appointment of a technical subcommittee to gather, collect and report back to this committee all available information, including the opinions of qualified scientists and engineers, regarding the importance of natural gas in the conservation and production of petroleum, and the best means for its most efficient utilization.

And, be it further resolved, that the members of the American Petroleum Institute and of the petroleum industry in general be, and they hereby are, requested to co-operate in every reasonable manner with the technical subcommittee so created, by making available to it their pertinent data and such qualified men as can be of the greatest assistance."

Conservation Measure

The committee of seven was authorized December 13, 1926, when the American Petroleum Institute adopted a resolution endorsing the conclusion of the Federal Oil Conservation Board of its report of September, 1926, that the prevention of the waste of gas incident to the production of oil was of paramount importance. The resolution provided for the committee of seven, which was authorized to devise and meet the consumption requirements for petroleum and its products, to conserve in its natural state such reserves of petroleum as may not then be required for consumption."

This committee met in New York, January 6, 1927, and passed a resolution to this effect:

"The Institute encourages the passage of appropriate State legislation to secure the uniform practice of this principle in all the important oil and gas producing States and should impress upon its members in the several States the need for such legislation and urge upon them their duty as individual members acting through their local organizations to help formulate and to help secure enactment of adequate State laws to this end."

The meeting here was thought to be for reporting on such legislation. E. W. Marland, the chairman, reported that the legal phases of the matter could not be determined without accurate data on the function of gas in the production of oil. After hearing statements from a number of the production engineers present, it was decided to seek the technical data first and to consider it at the October 19 meeting in Ponca City.

H. T. Flint of the scouting department of Roxana Petroleum Corporation has returned to Houston after a two-weeks' pleasure trip to California.

Louis Chappuis, formerly in charge of the exploration work for the Richfield Oil Company, has resigned to engage in a private geological practice.

Earlsboro Revival Causes Big Seminole Increase

Big wells in older producing area more than offset decline at Little River where water is more potent than proration

By WALLACE DAVIS
Staff Representative

TULSA—Little River field, after remaining in the limelight of Greater Seminole interest for more than three weeks, during which time the number of producers climbed from one to 13, gave way during the past week to the revived power of Earlsboro, the most spectacular of the five producing spots in the Seminole.

While Little River failed to add more wells to its producing circle that loomed as a probable market breaker this month and production declined in almost every one of those producing, with three showing heavy water content, Earlsboro, on a rapid decline for weeks, came back with a phenomenal rise for a developed productive area with completion of more than a dozen strong producers. The daily yield of the Earlsboro pool climbed Monday morning of this week to 175,460 barrels from a low mark of 156,824 barrels, reached September 14.

Among the leading producers at Earlsboro during the week was the revival of Independent Oil & Gas Company's Gaines 1, southeast of the northeast of the northeast of section 11-9-5, which, after completing, August 27, for 3440 barrels initial from 4268-79½ feet, cleaned itself September 17 and flowed 10,625 barrels pipe line oil. Independent's Bruner 4, northwest of the southwest of the northeast of section 10-9-5, topped the Wilcox at 4428 feet September 17, and at six feet in flowed 1430 barrels the first day. Gypsy Oil Company's Noble 3, northwest of the southwest of the northeast of section 12-9-5, topped the Wilcox at 4246 feet and at 15 feet in the pay made 1885 barrels Sunday. Independent's Sullivan 1, northeast of the southeast of the northeast of section 10-9-5, made 4724 barrels from one foot of Wilcox by agitating, September 17. On the same day The Texas Company's Brown 3, northwest of the southwest of the northwest of section 10-9-5, swabbed 40 barrels from 15 feet of sand with bottom at 4458 feet. Gypsy's Carter 7, northwest corner of section 11-9-5, flowed 1600 barrels in 19 hours from 14 feet of Wilcox topped at 4250 feet, September 17. Skelly Oil Company's Spencer 2, northeast of the northwest of the northeast of section 10-9-5, an offset to the spectacular Spencer 1, which had an initial of 13,000 barrels in July, flowed 70 barrels an hour, September 15. Independent's Sullivan 2, northwest of the southeast of the northeast of section 10-9-5, flowed 115 barrels an hour from 4338-41 feet, September 15.

Pure Oil Company shifted interest to the Searight pool September 16, when its Aldridge 5, southeast of the northwest of section 3-9-6, found the Wilcox at 4706 feet and after drilling in four feet, flowed 1270 barrels in 21 hours.

Production for the entire Seminole area for the 24-hour period ending Monday morning, at 7 o'clock, was 436,683 barrels, representing an increase of 17,458 barrels in five days, the figure from Monday being compared with the low level of 419,225 barrels reached on Wednesday, September 14. The great bulk of this increase is from Earlsboro, since the general trend of the other pools was down during the period. The output of each of the five pools as shown by the gauges for September 14 and 19, are as follows:

Field—	Sept. 14	Sept. 19
Earlsboro	153,527	175,460
Bowlegs	143,593	144,290
Seminole City	73,143	73,306
Searight	30,531	30,657
Little River	20,531	12,970
Totals	419,225	436,683

Production at Monday morning's gauge was coming from 810 wells, while 801 wells, September 17, produced 427,174 barrels.

Little River

A valuable coincidence in Greater Seminole production from the standpoint of the market situation is the fact that the Little River area began to strike a low level at the same time Earlsboro started staging its strong comeback. Little River wells were under the ruling of the proration committee at the time, with orders to curtail production per well to 100 barrels daily. Production rulings, however, were being slackened due to one well having been temporarily killed and others reported damaged by pinching, and production was running well over 1000 barrels per well in the pool. At the same time weakness of some of the wells resulting from natural causes was helping to curtail production. Mid-Continent's Wadsworth 1, southwest corner of section 36-8-6, was put on air September 18 after falling to a small flow, and made 390 barrels net oil that day. September 19, oil production increased to 800 barrels and the well made 150 barrels of water. Amerada's Nitey 1, northeast of the southeast of the northeast of section 2-7-6, which was a small producer two weeks ago and which made considerable water, was deepened late last week to 4140 feet and was still drilling.

Restriction Raised

Little River restrictions were amended by the State Corporation Commission September 16 to the extent of raising the production allowance per well from 100 to 1000 barrels daily in the pool. The commission order came as a result of protests of operators in the field, and was effective for 15 days "and until further order of the commission."

The order resulted from a conference attended by Fred Capshaw, chairman of the commission; W. J. Armstrong, chief conservation officer; Frank Carter, commission; J. D. Denton, vice president and general counsel for the Mid-Continent Petroleum Corporation; W. C. Franklin, vice president and general manager of the Tidal Oil Company, and Ray Collins, umpire and director of proration of production in the field.

Today's order says of the original order: "The order by its provisions approved a tentative plan of proration agreed upon between the principal operators interested in said oil field, finding that said tentative plan of operation would result in the prevention and reduction of waste which was found to exist at that time.

"By the terms and provisions of said order No. 3944 and based upon the curtailment plan tentatively agreed upon by the interested parties in said field, it was found and determined that the production in the Searight, Seminole, Bowlegs and Earlsboro pools in the Greater Seminole area should be confined and limited to total production of 450,000 barrels per day for a period of 60 days, unless specifically revoked by order of the commission.

"It is further provided, based upon said tentative operating agreement, that while

TEST COMMISSION ORDER

Seminole area gauged 434,010 barrels Tuesday, September 20, plus production of three wells of Blackwell Oil & Gas Company at Little River. Gauge by pools was as follows:

Earlsboro	174,010
Bowlegs	143,150
Seminole City	73,260
Searight	31,605
Little River	11,985

Little River production was from 10 wells, the remaining three producers in the field being those of the Blackwell Oil & Gas Company, which has disregarded the commission's ruling on proration, and opened Nitey 1, 2 and 6 to full capacity, refusing to announce production. This action is expected to test the power of the commission, as it is reported preparing to force shutting the wells in.

the plan provided by the order was in effect, that each lease in said territory might be allowed to produce the same production of 450,000 barrels per day, which the potential production of any such lease might bear to the total potential production of all said pools, such a potential production to be determined by the umpire."

Seminole came unannounced and has given little fair warning of any of its performances since the beginning, and practically all of those who have guessed at what it would do have missed gloriously, but present indications existing there offer reason to believe that if the industry can bear with Seminole a few months longer the dangerous period will have passed. The area shows much is to be done within the next few weeks as far as new wells are concerned, and the biggest flush to be seen within the territory should have passed within that time. Field activity now under way in the five pools indicate that the above might be logical reasoning.

Drilling Slackens

At the opening of this week there were 466 active locations in the Seminole area. Two hundred and five of these were wells drilling below 3700 feet, standardized and ready to standardize. Eighty of the drilling wells were between 3100 and 3700 feet, 94 were between 2000 and 3100 feet and only 51 drilling wells were above 2000 feet. There were only 36 rigs up. Locations have recently been growing less each week in the Seminole area. Drilling operations have been cut from 500 to 466 within eight days. At the present rate locations are being staked in the area there should be less than 400 operations there within the coming three weeks. The 205 operations now running below 3700 feet are due for completion within the coming month, and if locations continue to run at the present rate there will be only around 50 new operations started by the time the 205 are completed.

Earlsboro leads in activity with 184 active locations, including nine rigs up, 24 wells drilling above 2000 feet, 20 drilling between 2000 and 3100 feet, 45 drilling between 3100 and 3700 feet and 86 drill-drilling at 2745 feet; Rhea 1, rig.

Little River ranked third in the number of active locations with 97. There were 14 rigs up, 14 wells drilling above 2000 feet, 44 drilling between 2000 and 3100 feet, 13 between 3100 and 3700 feet and 13 drilling below 3700 feet.

Searight has 31 active locations, including one rig up, two wells drilling above 2000 feet, seven between 2000 and 3100 feet, seven between 3100 and 3700 feet and 14 drilling below 3700 feet.

Seminole City pool has 29 operations, including one rig up, no wells drilling above 2000 feet, three between 2000 and 3100 feet, two between 3100 and 3700 feet and 23 below the 3700 foot level.

Seminole Air and Gas Lift Engineers Organize for Study and Experiment on Methods

Tulsa—An organization known as the Seminole Air Lift Society was organized September 16 at Seminole, enrolling about 40 charter members, including both engineers and production men working in connection with air and gas lift in the area.

The outstanding purpose of this unique organization is for well outlined research and experimental work to be carried on and the outcome of different jobs compared by members of the society in order to get the best effects of gas and air lift in the future. The work of the organization is to include results of air and gas lift methods with other recovery methods, thereby testing the economy comparatively of various methods.

The inception of such a society is a good example of the present tendency in the oil industry toward methodical and cooperative work among technical men for the common good of all concerned.

The Seminole Air Gas Lift Society differs from most societies in its organization, choosing to have no officers, but rather a group known as the steering committee. At the initial meeting held September 16 at the Indian Territory Illuminating Oil Company's Walker camp at Seminole a secretary was elected and a temporary chairman was appointed. The latter in turn appointed three men on the steering committee, their duty to be to arrange for the next meeting of the society, to compile programs and to have charge of the organization's general affairs. At each session the chairman is to name the man to have charge of the next meeting in order that this man's paper will be read and held the center of discussion.

A second meeting of the society was scheduled for September 21, also to be held at Indian Territory's Walker Camp, but meetings thereafter are to be held semi-monthly, with research work to be continued between meetings for the purpose of having new material for each gathering of the group.

Robert L. Carruthers, engineer for Twin States Oil Company, and one of the leading authorities on air and gas lift in the Mid-Continent territory, was appointed temporary chairman pending the final organization work. C. M. Rader and Dr. D. B. Dow of the Indian Territory Illuminating Oil Company and W. L. Underwood of the Pure Oil Company were appointed by Carruthers as the first steering committee. Thompson of the Indian Territory Illuminating Oil Company was elected secretary of the society.

Nine Active Operations at Cedar Creek

Mexia, Texas—Nine active tests in the Cedar Creek field, which was uncovered August 24 by Reiter-Lewis & Moutray Oil Company's Ward 1, with an initial flow of 570 barrels of oil and 8,000,000 cubic feet of gas from Woodbine sand formation at 2876-84 feet, were under way early this week. The first completion scheduled among these drilling tests will be Transcontinental Oil Company's E. W. Lewis 1, a diagonal offset to the discovery well. Rigs or derricks have been set up on five additional locations, making 14 operations in the field.

Humble Pipe Line Company is building a four-inch line from the Nigger Creek field to make a bid for a share of the expected flush production. Pure Oil Pipe Line Company built a six-inch line to serve the discovery well, and has arranged to take on more connections if production is obtained from tests now drilling around the discovery well.

The discovery well is holding at about 500 barrels of oil daily, with about 10 per cent b.s. and less than 1 per cent water showing.

Transcontinental's Lewis 1 is a northwest diagonal offset to the producer, and cemented 6⅝-inch casing Sunday at 2897 feet. This test logged the Austin chalk at 2577-2664 feet, with a surface elevation of 512 feet, and a comparison of logs indicates that it is much nearer the fault than the discovery well. The Lewis test is to drill in late this week.

Drilling report covering Cedar Creek field operations is given below: Cranfill-Reynolds & Sun Oil Company's Dugger 1, elevation 522 feet, drilling at 2030 feet. C. W. Harrison-McCamey et al's Williams 1, derrick. J. K. Hughes Developing Company's Lewis 1, rig. Reiter-Lewis & Moutray Oil Company's Dugger 1, drilling at 1200 feet; Lewis 1, drilling at 1100 feet; Ward 2, elevation 504, Austin chalk, at 2147-2464 feet, drilling at 2650 feet. Rycade Oil Company's Ward 1, elevation 504, top of chalk at 2114 feet, drilling chalk at 2405 feet. Transcontinental Oil Company's Dugger 1, elevation 534 feet, drilling at 1965 feet; Dugger 2, rig; Lewis 1, elevation 512 feet, chalk at 2577-2664 feet, cementing casing at 2897 feet; Ward 1, elevation 507 feet, top of chalk at 2135 feet, hard chalk at 2280-2464 feet, drilling at 2700 feet. Why Not & 44 Oil Company's Lewis 1, elevation 510 feet, soft chalk at 2190-2332 feet, hard chalk at 2332-2505 feet, base chalk at 2530 feet, drilling at 2745 feet; Rhea 1, rig.

Utah Oil Refining Co. Takes Over Franchise

Rock Springs, Wyo.—Utah Oil Refining Company is reported to have taken over the pipe line franchise from California Petroleum Corporation to lay a line from the La Barge field to railhead at Opal. Construction will begin immediately, it is said. Line will be 45 miles in length and of six-inch pipe.

Gulf Company Builds Long Line To Serve West Texas

Approximately 543 miles of eight and ten-inch pipe was laid since January; six big crews rush work

By H. H. KING
Staff Representative

FORT WORTH, Texas.—Approximately 543 miles of combination eight and ten-inch pipe has been built by the Gulf Pipe Line Company since the middle of last January to provide a market outlet for West Texas crudes being produced by the Gulf Production Company. This line extends from Gulf's McElroy ranch property in Crane County via Ranger and Wortham to Lufkin, where a connection is made with the company's principal Mid-Continent trunk line leading to Port Arthur. This line is rated good for 30,000 barrels daily in capacity, and is handling about 25,000 barrels of West Texas oil daily.

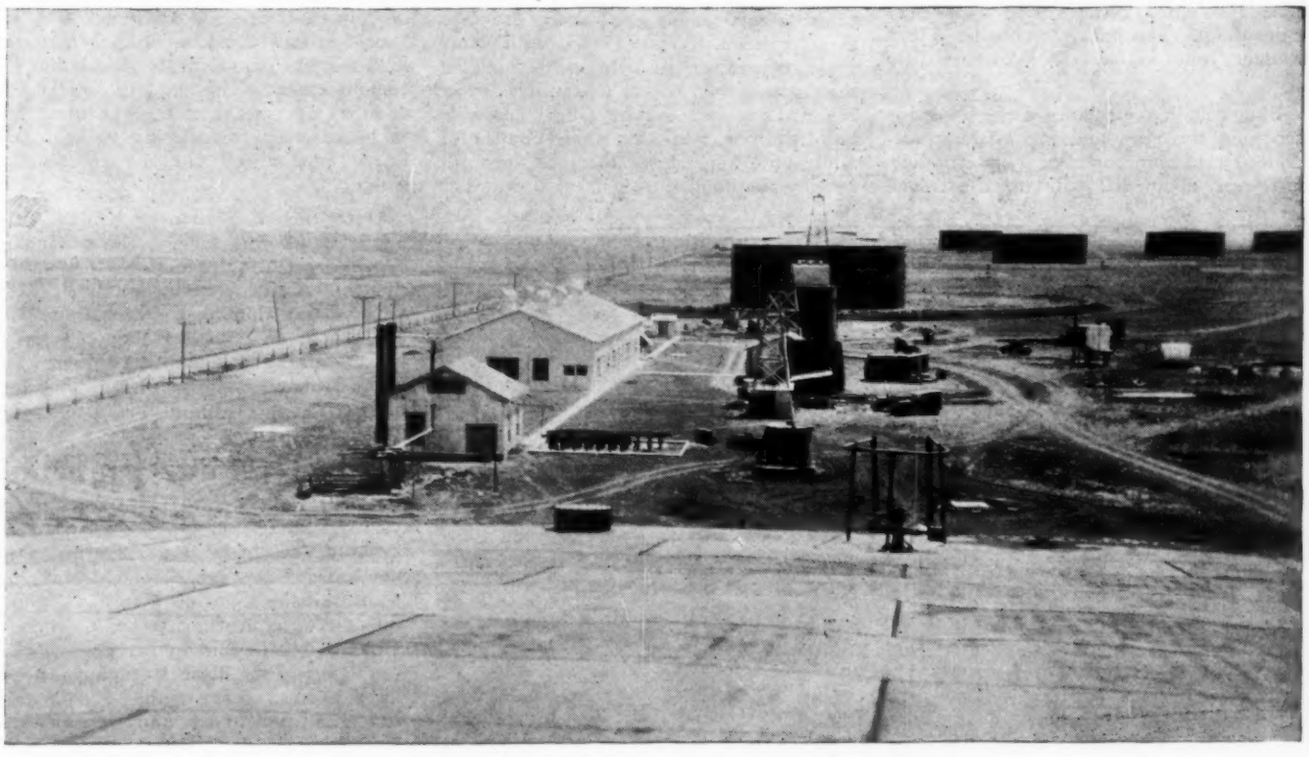
Two extensions, involving about 50 miles each, are to be made on the western end of this trunk line within a few months in order to handle flush production being developed by Gulf Production Company in the Yates field, located in Pecos and Crockett Counties, and the Hendricks field, Winkler County.

The first unit of the Gulf's West Texas trunk line was authorized for immediate construction about January 15 after the McElroy property was proven for big production, with only a small market outlet for the crude being produced. This unit consisted of 47 miles of eight-inch line from the north end of the McElroy property to a tank farm on the Texas Pacific Railroad near Midland. The south 320 acres in section 41, block 38, T. & P. Railway survey, T-1-S, was leased for the Midland farm. The first oil was put through this line February 24. Gulf erected six 80,000 barrel tanks and four 55's on this farm with intentions of accumlating a big stock of crude at this point, with moderate tank car shipments via a 30-car capacity rack on the railroad. The first trainload of oil was dispatched to Port Arthur March 4. The freight rate on this oil amounted to 21½ cents per hundred pounds, and discouraged continued heavy shipments. Unsuccessful efforts were made to obtain a more moderate tariff on this crude movement to tidewater.

Within two weeks after the first train load of crude was dispatched from the Midland rack, Gulf authorized the extension of its line from Midland via Ranger to Lufkin a distance of 471 miles. The surveyors were put to work March 18, and actual construction was underway April 28.

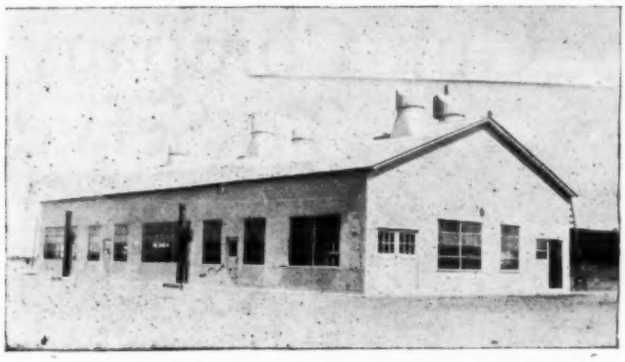
Ten-inch pipe was used in building from Midland to Ranger, a distance of 211 miles, and eight-inch pipe was built parallel Gulf's original Central West Texas trunk line between Ranger and Weatherford, a distance of 44 miles. From Weatherford to Wortham, 110 miles, the size of the pipe was increased to 10-inch. Gulf's old line from Ranger to Weatherford heads into Fort Worth, thence to North East Texas, where a connection is made with the Oklahoma trunk line. This latter route is much longer, and for that reason the West Texas oil was routed over a more direct course to reach tidewater. Between Wortham and Lufkin, a distance of 106 miles, Gulf built eight-inch pipe parallel with an old six-inch line that has been serving the Mexia-Corsicana district wells operated by Gulf for some years. The smaller line will be used part time for handling West Texas crudes.

Main line stations were built by Gulf on the McElroy property, section 202, block "F", Crane County; Midland; Roscoe, Nolan County; and extra pumping units were installed in the old stations at Ranger, Weatherford, Wortham, Elkhart,



VIEW OF ONE OF GULF PIPE LINE COMPANY'S STATIONS

POURING CONCRETE FOUNDATION FOR OIL ENGINE STATION AT MIDLAND



GULF'S McELROY STATION, ON THE WEST END OF THE LINE

and Lufkin. Gulf used two units of 200 horsepower De La Vergne oil engines and Goulds pumps in the three new stations, and the pumping equipment at the Ranger and Weatherford stations was increased to three units. Another station will be added between Midland and Ranger at a later date in order to obtain maximum capacity of the ten-inch line, but the one intermediate station at Roscoe is ample at present, owing to a surface elevation drop of about 1500 feet being in favor of the oil movement. Each pump station is protected with an adequate water supply, and reserve tanks are built of concrete about 75 x 200 feet in dimensions.

Six Construction Crews

Six gangs of pipe liners were recruited by Gulf to construct the West Texas line, and a separate camp for each gang was outfitted. The number of workmen in each gang ranged from 150 to 250, and the camps were scattered at intervals between Midland and Ranger to rush the completion of this section of the line. The gangs made as high as eight miles of line daily in favorable spots, while the average time for the 211 miles was about 4½ miles daily. The line was completed into Ranger June 15, and to Wortham July 20.

Pipe coupling machines were used for screwing the pipe, and the ditching was done by machines where ever possible. However, about 160 miles of the trench was through rock surface, and approximately 50 tons of dynamite was needed to excavate the 30-inch trench in this hard formation.

Save-A-Line pipe line coating applied cold was used by Gulf for insulation on its West Texas trunk line. The pipe was cleaned thoroughly before given the one application.

The providing of field camps for the pipe line gangs required considerable detail work, since most of the outfits had to be purchased and assembled at the points needed. Rag houses, or tents, 16 x 21 feet were used for sleeping quarters for the workmen, and each man was given a 36-inch steel cot covered with a 36 pound mattress. The cook shack and mess hall were also canvass covered.

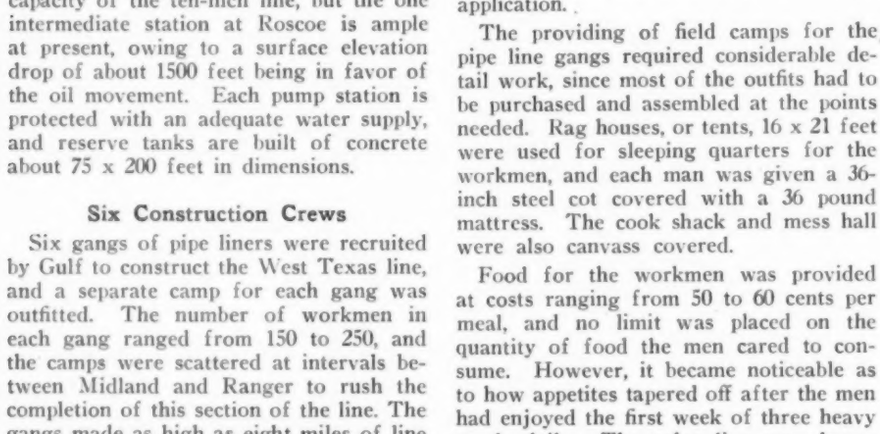
Food for the workmen was provided at costs ranging from 50 to 60 cents per meal, and no limit was placed on the quantity of food the men cared to consume. However, it became noticeable as to how appetites tapered off after the men had enjoyed the first week of three heavy meals daily. The color line was drawn on the class of men hired for duty in the camp as well as on the line in order to avoid friction. White cooks, with many years experience in field camps, put in their appearance within a few days after the news leaked out on Gulf's plans to build the line, while an ample number of white boys applied for the jobs open for serving the food during meal time. The cooks were paid $150 monthly, besides meals and shelter, while assistant cooks received $125 per month. The "flunkies" waiting on tables received $75 monthly. The meals were placed in charge of a commissary man at each camp, and the sleeping quarters were taken care of by a "come boss".

These camps have since been abandoned by Gulf, and all bedding and other camp equipment not salvagable was burned on the spot. Kitchen utensils, etc., were thoroughly cleaned, and stored away for future use.

Gulf does not employ deputy sheriffs, or other peace officers to maintain order in its camps, but provides each construction foreman in charge of a gang with blanket authority to strike the name of any person from the company payroll that does not adhere to camp rules. These foremen back up their orders with a well placed fist, or a short length pick handle, and as a rule have no truoble with their men.

County highway laws threatened to slow down construction work on Gulf's line in crossing Johnson County, as the number of joints of pipe to each truck was cut almost in half the usual load to meet the load-weight requirements fixed by the commissioners. This hauling of pipe was done by contract, and night hauling had to be resorted to in order to keep sufficient pipe ahead for the construction gangs.

Since the completion of Gulf's West Texas trunk line system, the production owned by Gulf Production Company in the Gulf-McElroy and Church & Fields areas, Crane County, has necessitated the addition of an eight-inch loop 25 miles in length on the Midland end of the McElroy-Midland eight-inch line. This loop has been completed, and put in operation.



WELDED MANIFOLD AT GULF'S RANGER PUMP STATION

Denver Grants Franchise For Natural Gas

Denver, Colo.—City Council of Denver has granted a natural gas franchise to the Cities Service Company and a pipe line from the Amarillo lines to Denver will be laid by interests backed by Prairie Pipe Line Company and its subsidiaries. Line will be 440 miles long and will cost about $20,000,000. Consumption for the first year is estimated at 20,000,000 cubic feet per day.

Magnolia Announces Line to Serve West Texas Fields

Construction of 220-mile welded line with 18,000 barrels daily capacity is planned for completion early in December

DALLAS.—Decision has been made by the Magnolia Pipe Line Company to extend its Mid-Continent trunk line system from the De Leon pump station, Comanche County, to West Texas fields with an eight-inch welded line and provide a direct outlet for all crude produced and purchased in the future by the Magnolia Petroleum Company in the district. This trunk line extension will terminate at the Midland tank farm now being erected on the Texas Pacific Railroad near the town of Midland, with an eight-inch gathering line extending southwest of the Church & Fields area, Crane County, while it is also planned to build west from Midland to the Hendricks field, Winkler County. Magnolia's line from Midland to De Leon will require approximately 220 miles of pipe, with four main line stations, and will handle about 18,000 barrels daily. About two thirds of this capacity will be available for purchased crude.

The first batch of pipe to be used by Magnolia in building to West Texas has been shipped by Eastern mills, and construction crews will follow in the wake of surveying crews and right-of-way buyers, who started work early last week. According to officials of the company, the line is to be in operation early in December, 1927, and the construction crews are expected to average about three miles of completed line daily.

Heretofore, Magnolia has built tank farms and accumulated large stocks of crude before extending trunk lines any great distance, as illustrated by the policy adhered to in Louisiana, Arkansas, Luling, Mirando and the Texas Panhandle in recent years. West Texas has developed such a large potential supply of flush crude in recent months that a number of trunk lines can be amply protected with oil for many years hence without depending upon new discoveries.

Magnolia Petroleum Company has a semi-flush production of 5,000 barrels daily in Crane, Howard and Mitchell Counties, and has been storing the entire output in the former two counties, with a portion of the Mitchell County oil going to a nearby refinery. Magnolia had six completed 55,000 barrel steel tanks containing 185,000 barrels of crude at the close of August in the Church & Fields area, Crane County, and five completed and one 55,000 barrel tanks building at its Iatan tank farm, Mitchell County. Crude stocks at the close of August in the latter farm amounted to 242,300 barrels, or a total of 427,300 barrels in the two West Texas farms. Other than a few small connections taken on in the Chalk field, Howard County, Magnolia has not purchased outside oil in West Texas.

Fourth "Standard" Buyer

Allowing for a further increase in crude output in the Church & Fields area, Magnolia's West Texas production is expected to be about 6,000 barrels daily when the trunk line extension is placed in operation late this year. In the event Magnolia chooses to load this line to capacity with purchased oil, the company will afford a market for about 12,000 barrels daily. This quantity of crude has already been offered to Magnolia by Crane County producers, who are having to store a portion of their current output.

Four Standard Oil units will be represented in the group of West Texas crude buyers when Magnolia completes its trunk line, as New Jersey is represented by Humble, and the Southern Crude Oil Purchasing Company is the buyer for the Standard of Indiana. Mid-Kansas Oil & Gas Company (Illinois Pipe Line Company) is to buy a limited amount of Yates field crude upon the completion of an eight-inch line to tank farm and rack at Del Rio. Gulf is the only company besides Humble with direct pipe line outlet from West Texas to tidewater at present, but is confining its runs to that produced by the Gulf Production Company.

In order to make speed in building to West Texas Magnolia will scatter four gangs consisting of about 100 trained welders each, along the route. Many of these welders were trained by Magnolia in 1924 when a special school was conducted at Beaumont to obtain sufficient men to build a gas line from North Louisiana to Beaumont, and have been used in the meantime by Magnolia on four major pipe line projects.

The stringing of pipe, ditching and back filling will be let by contract, as has been the case heretofore on other big jobs. The stringing of pipe will not be above normal cost on the West Texas line, since it will follow the Texas Pacific Railroad most of the way between Midland and Sweetwater, and from the latter point to Sweetwater good roads will be close at hand. The trenching will be expensive across several counties, owing to hard rock being at the surface and requiring blasting.

Four Stations

Four main line stations will be distributed along the line, and equipment for same is to be purchased this week. Reciprocating pumps will be used, driven by electric motors. The line will be favored with a drop in surface elevation of about 1500 feet between Midland and the De Leon station.

Additional loops and larger pump station equipment will be installed by Magnolia between its De Leon and Corsicana stations, which are now connected with an eight-inch trunk line. From Corsicana south to Beaumont, Magnolia has three eight-inch lines, with a extra loop at intervals.

Other than being smaller sized pipe and terminating a few miles away, Magnolia's West Texas line is almost a duplicate of Gulf's system. Gulf built from Crane County to a tank farm at Midland, then extended eastward via the Texas Pacific Railroad to Eastland County. Magnolia bought surface rights on section 43, block 38, T & P Railway survey, T-1-S, near Midland and adjacent to Gulf's Midland tank farm, in March, 1927. Magnolia began surveying for an eight-inch line route from its properties in Crane County to the above Midland tank farm site on August 22, and was engaged in welding the line when decision was reached to continue on past Midland to De Leon. Magnolia will build a half dozen tanks at the Midland farm as soon as materials can be shipped in, and will add more tanks if needed, making this point its crude gathering center in West Texas. The Iatan tank farm will be tapped by the trunk line enroute to De Leon.

Dixie Gas Company to Start Work on Line

Houston.—According to announcements made by the Dixie Gulf Gas Company, work will start on the 22-inch pipe line to be built from northeast Texas to Goodrich, near Beaumont, about September 25.

Two crews will start on the big end of the line, working 35 miles apart. There will also be one crew working on the Houston end and probably three river crews. Hope Engineering and Supply Company is to build the line. Estimated completion date is by February 1, 1928.

Capacity of the line at completion will be about 150,000,000 feet of gas per day. The northern terminus will connect with the pipe line of the Reserve Natural Gas Company of Louisiana, in the vicinity of Waskom, Texas. At Goodrich, the line will branch, and 18-inch division serving Port Arthur, Orange and Smith's Bluff, and a 16-inch section serving Houston.

Contracts have been secured for the sale of gas to The Texas Company and the Pure Oil Company for use in their refineries. The company also has a contract with the Houston Gulf Gas Company now supplying the city of Houston.

Management and control of the Dixie Gulf Gas Company will be in the hands of Messrs. W. L. Moody III, and O. R. Seagraves.

Declining Production and Shipments Lower Crude Stocks Held in Texas Panhandle

Amarillo, Texas—Semi-wildcat territory in west central Gray County contributed its second large producer early this week, when Gulf Production Company's J. B. Bowers 1-A gauged 85 barrels of 39.7 degree gravity oil per hour from big pay at 2990-3003 feet. This producer is located in the southwest corner of section 89, H&GN survey, block B-2, and is an east offset to the Majestic Oil Company's discovery well, which made 700 barrels initial from granite wash pay at 2955-3035 feet in May. This new producing area is located several miles south of the Wilcox-Pampa field, and is served by the Sinclair Crude Oil Purchasing Company's gathering system, which terminates at tank car rack near Pampa.

Phillips Petroleum Company's J. A. Whittenburg-Elra 12, located in the heart of the Hutchinson County oil area, has suspended operations at 4445 feet after an unsuccessful try for deep production. This test cased off a hole full of water a few weeks ago with 5 3/16-inch casing set at 4323 feet. Roxana Petroleum Corporation's E. Cockrell 1, which was reported last week as having drilled itself deeper into the soft lime, resulting in production jumping to above 8,000 barrels daily, continues to produce in excess of 7,000 barrels daily, and is now the largest well in the Panhandle.

Casing is being run to make a test of the oil bearing formation encountered by Frairie Oil & Gas Company's wildcat test on the Landergin ranch in Oldham County. This wildcat is located in the southwest corner of the northeast one-fourth of the southwest one-fourth of section 46, league 310, Capital Syndicate Lands, and developed a small show of oil at 4495-4518 feet, after encountering the big lime at 3773 feet, with a surface elevation of 3606 feet. Jones-Nolan Drilling Company are the contractors on this test, which was spudded January 10. It encountered a pocket of noninflammable gas in salt beds at 1620 feet, and a hole full of water at 4085-93 feet.

Declining production and increased crude movement via pipe line during August resulted in a small withdrawal from crude stocks in the Panhandle district during the past month. The district is credited with having 18,687,180 barrels of crude in storage at the close of August, or 109,740 barrels less than the total reported at the close of July. The slump in crude stocks was largely due to selling done by independent producers in Hutchinson County, as all the major crude buyers and pipe line companies in the district, except Gulf, registered a gain in stocks during August. The available empty storage facilities in the district on September 1 was estimated at 4,697,320 barrels, while Prairie is adding six 55's and Phillips Petroleum Company is erecting five 80,000-barrel steel tanks near the Hutchinson-Carson County line.

Crude stocks in the Texas Panhandle district at the close of August is listed below by companies:

Company—	Barrels
Magnolia Pipe Line Company	3,833,450
Phillips Petroleum Company	3,348,840
Gulf Pipe Line Company ...	3,161,475
Prairie Pipe Line Company..	2,441,225
Marland Pipe Line Company	2,003,150
Skelly Oil Company	1,017,360
Plains Pipe Line Company..	642,450
Humble Pipe Line Company	626,040
Roxana Petroleum Corp.	230,275
Bell Oil & Gas Company....	200,310
Empire Gas & Fuel Company	175,950
Cockrell-McIlroy Interests ..	136,000
Japhet Production Company.	107,480
Devonian Oil Company	103,420
Mid-West Exploration Co. ..	84,610
J. J. Perkins, et al	79,225
American Refining Company	70,395
Dixon Creek Oil Company..	65,000
Champlin Refining Company	63,200
Derby Oil Company	61,345
Sunny Jim Oil Company	52,485
Coble-Whittenburg Oil Co. ..	49,990
Atlantic Oil Producing Co. ..	46,955
Julian Pet. Corp.	34,890
The Texas Company	34,060
Pantex Oil Company	17,600
Totals	18,687,180
Totals close July	18,796,920
Decrease	109,740

Doheny Suit Judgments Paid to Treasury

Washington, D. C.—A total of $24,237,341 has been deposited in the treasury as a result of the oil lease litigation with the payment last week by the Pan American oil companies of $13,613,151, representing the amount of the decree of the District Court of California against them, including costs, it has been announced by Secretary of the Navy Wilbur on the basis of reports from Atlee Pomerene and Owen J. Roberts, special government counsel in the oil cases.

This payment virtually brings to an end the litigation against E. L. Doheny as principal owner of the Pan American companies, as a result of the Fall-Doheny scandal in which the United States Supreme Court held that leases made by Albert B. Fall, former Secretary of the Interior, to the Doheny interests, were fraudulent and that the moneys derived from operation under the leases should revert to the navy department. Moreover, certain properties of the Pan American companies were declared the property of the government. These properties have a total value of $10,744,108.

The funds just deposited to the credit of the treasury included $11,446,160 as principal, $1,563,347 interest and $3,643 costs. The principal represents the value of the royalty oil, gas and gasoline from naval reserves Nos. 1 and 2, which was delivered to the United States to the Pan American Petroleum & Transport Company, and the profit derived by the resale of these commodities, amounting to $9,889,299, and the value of the oil, gas and gasoline produced by the company from the leases which have been in litigation in reserve No. 1.

Mid-Continent Assn. Will Meet During Exposition

Tulsa.—The annual meetig and banquet of the Kansas-Oklahoma division of the Mid-Continent Oil & Gas Association is to be held September 30 here. The date is the last day of the International Petroleum Exposition. Due to the exposition and the fact that Colonel Charles Lindberg is scheduled to attend the banquet, the affair is due to set a record in attendance and interest in the banquet.

The date was fixed this year to coincide with the International Petroleum Exposition. The meeting of the association will be at headquarters on the fifth floor of the Cosden building. The banquet will be in the Mayo Hotel.

The announcement for the annual meeting reads:

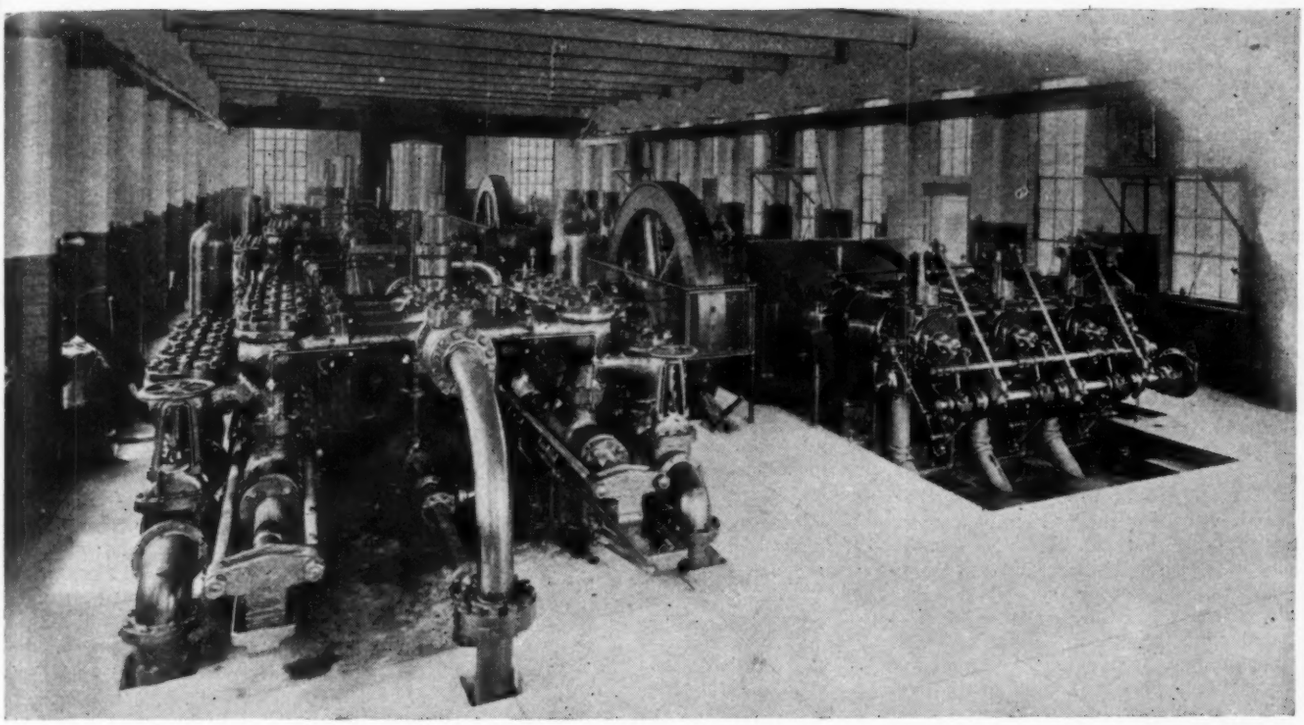
"A new executive committee is to be elected at this time and the policy of the association on a number of matters determined for the ensuing fiscal year. Out of town members will be here attending the International Petroleum Exposition during that week. It will be handy for them to attend the business meeting in the afternoon and the annual banquet that night in the Crystal ballroom of the Mayo Hotel."

Final arrangements for the banquet will not be made until the activities of Colonel Lindberg are outlined. His visit is to be the high light of the Exposition. His presence at the banquet will make it one of great value.

Hon. N. A. Gibson of Tulsa will be toastmaster. E. W. Clark, president of the American Petroleum Institute; James A. Veasey of the Carter Oil Company, and John Lee of the University of Oklahoma are speakers for the affair.

T. E. Swigart, production engineer of the Shell Company, has retutrned to Los Angeles after a successful deer hunt on the Cuyama river. Mr. Swigart discovered that field glasses were very valuable in stalking the deer. With their use it was easy to tell at a great distance whether the said specimen was a doe or a buck.

William B. Sutton, manager of the land department of the Vacuum Oil Company at Houston, left last week for a vacation to be spent in the lower Rio Grande Valley, El Paso and West Texas points.



—Photo courtesy Walworth Company.

HIGH PRESSURE PIPE LINE PUMP STATION—OZARK PIPE LINE

Pipe Line Construction and Operating Principles and Practices

By H. L. KAUFFMAN
Petroleum Consultant, Denver, Colo.

PIPE lines for the transportation of petroleum and its derivatives are of two main classes:

Pipe lines for the transportation of crude petroleum or refined or semi-refined petroleum products, and

Pipe lines for the transportation of natural gas. The present article will be limited to a discussion of the construction and operating principles involved in the transportation of liquid petroleum and, particularly, of crude oil.

Historical

Attempts were first made to use a pipe line in transporting oil in 1862 by J. L. Hutchings, who pumped oil by means of a rotary pump through a line from Tarr Farm, Pennsylvania, to the Humboldt refinery below Plumer, Pennsylvania. The pipe used was of poor quality and the joints leaked; but the experiment proved that the idea of pumping oil through a pipe line was sound.

The first successful pipe line operated in the United States was owned by Samuel Van Sycle, who, in August, 1865, completed a 2-inch line, four miles in length, from Pithole to Miller Farm, Pennsylvania. There were two pump stations on this line, one mile west of Pithole and the other at Cherry Run. This line was buried two feet under the ground, for no other stated reason than to be out of the way of the farmer's plow. Eight hundred barrels of oil per day could be run.

Thereafter pipe line construction took place rapidly as new producing fields warranted so doing, until there are now about 90,000 miles of pipe lines in the United States alone, these lines being capable of transporting oil to the Atlantic seaboard from points as far west as the State of Wyoming.

Improvements in pipe line construction and operation during the past 60 years reside mostly in improvements in pumping equipment. Single-stage, then double-stage steam pumps were first used, followed by gas engine and then power pumps. Coal was the fuel used under boilers at that time, none realizing the utility of natural gas, which was wasted, for heating boilers. Now pumping equipment is modernized to a point where pumping costs are relatively low as compared with the operating costs of that period.

That the quality of the pipe used in the 70's was not of an inferior quality is shown by the fact that some of this old pipe is even yet found to be in excellent condition whenever occasion requires that any of it be taken up. Such deterioration as occurs is usually found on the inside of the pipe (due to the action of salt water) and, generally, in parts where the pipe has been laying in low places.

Pipe Line Classification

Ordinarily, a pipe line "system" is considered to include not only the pipe line itself, but also all storage tanks used in connection with transporting the oil, as well as pumping stations, the "right of way" for the pipe line proper, all telephone and telegraph lines, employes' houses and all other property used in any way in connection with the movement of the oil through the pipes.

In general, however, pipe lines may be divided into two principal divisions, namely:

"Gathering lines" that connect the pipe lines with the tankage system of the pipe line owner.

Main "trunk lines" that convey the oil from the producing field to the refineries or other points of consumption.

Roughly, the pipe line system of the United States consists of about half gathering and half trunk lines.

Pipe Line Construction

Building a pipe line, like constructing a railroad, involves first a survey of the route with regards to grades, stream crossings, etc. However, where a railroad seeks the cities in order to get their business, a pipe line avoids all cities and towns in order to reduce expenses.

According to the amount of oil that it is desired to pump through the line in 24 hours, the pipe line laid may be 4, 6, 8, 10

or 12 inches in diameter, or even larger. Pumping stations generally are about 40 miles apart, but when the lines are being laid in rough country or for transporting heavy and viscous oils, the stations are placed much closer together.

A pumping plant includes engines and pumps powerful enough to shove the oil along to the next station. At each station are located tanks ranging in capacity from 10,000 to 55,000 barrels, the oil being pumped directly to and from these storage tanks. In other words, a continuous stream of oil is *not* pumped through the line from its beginning to its end but, instead, there takes place a succession of "pumpings" from one storage tank to the next.

Design of a Pipe Line

When a viscous oil must be transported through a pipe line, the problem of designing a pipe line system becomes very complex, especially since there is a limit to the pressure that can be withstood by the pumps and the pipe in forcing the oil through the line. The extent of the pressure (frictional pressure) built up by the movement of the oil through the pipe depends largely upon the rate at which the oil is being moved through the line and upon the viscosity and density of the oil being pumped.

One of the things that it is essential to know in designing a pipe line is the viscosity, and other physical characteristics (such as cold test, density, etc.), of the oil to be transported. As mentioned in a previous article,[1] "viscosity" is a measurement of the fluidity of an oil or, in other words, a measurement of its resistance to motion.

At moderate temperatures, some crude oils with a high paraffin content will flow easily, but when these same oils are chilled it is difficult to pump them through the lines. Hence, it is important for the designing engineer to know the cold test as well as the viscosity of the oil to be transported.

In other words, in considering the design of a trunk line system, it is desirable to know what crudes will have to be transported through the line, and then to ascertain the physical characteristics of each. Cold tests of the different crudes to be handled should be determined, as well as the densities and viscosities of the different oils at various temperatures within range of the oil temperatures attained during the transportation of the oil through the line. With these data at hand and, in addition, the information supplied by the engineers' survey of the course of the line, the pipe line system is designed.

Influencing Factors in Pipe Line Design

It is not considered as being within the scope of the present article to enter into a detailed engineering discussion of how pipe lines are designed, but mention *will* be made of some of the influencing factors involved therein, together with a brief discussion of same.

When designing a particular pipe line whether a trunk line or a gathering line, the engineer tries to select pipe of the smallest size that will do the work. Knowing the quantity and kind of oil that the line must deliver, the problem is to determine the size of pipe that will handle the oil, easily, in the time required. Thus it would be un-economical to install a 4-inch line, costing about three times as much as a 2-inch line, which latter line will deliver satisfactorily the required quantity of oil. However, in determining the size of pipe required, an intimate knowledge of the things influencing the flow of the oil is necessary. Such influencing factors as viscosity, density, cold test and water content of the crude have already been mentioned in this and in a previous article.[2]

Now let us see what fundamental physical facts regarding the flow of oil through pipes should be understood.

In discussing this phase of the subject, first, let us assume that we have oil in a level pipe line; therefore, when the oil is at rest, the pressure at all points along the line will be the same. But, if the pressure at one end of the line is increased, then the oil will move toward the other; and in so doing, in view of the fact that *adhesion* between the pipe and the fluid is usually greater than *cohesion* between the particles of fluid, a film of the oil next to the pipe remains almost stationary. This then results in the main body of the oil moving through what, in reality, amounts to a cylinder of oil.

Let us now picture the whole internal area of the pipe as being filled with thin, concentric cylinders of oil. As the oil is flowing, the inner cylinders are moving through other cylinders, also in motion, so that the velocity of the oil becomes greater as the center of the pipe is approached. If the force causing the flow, that is, if the pressure be gradually increased, the velocity of the oil at the center likewise will be increased, while the so-called "outer cylinder" will remain almost stationary. Under these conditions, dependent upon the velocity of the moving oil, the pressure at any cross section of the pipe can be resolved into two forces, one static and the other dynamic. If the sum of the static and the dynamic heads at any cross section are constant, the static head (that is, the one tending to produce flow) will be greater at the edge of the pipe than at the center.

Disregarding gravity and static pressure, there are four main forces acting on each particle of the thin cylinder of oil within the pipe, namely:

1. An outside force tending to retard.
2. An inside force tending to accelerate.
3. A force tending to push the particle forward and to force it toward the center.
4. A force, due to inertia, tending to keep the oil particles moving in the same direction.

When these forces become sufficient to overcome the cohesion of the particles, a cross flow will be established, after which there will no longer be cylinders moving within cylinders, but instead, an indeterminable mixing of the oil in the pipe. The point at which this change of condition takes place is called the critical velocity. The flow in cylinders is called the "sinuous" or "straight line" flow, while the flow at the higher velocities is known as "edging" or "turbulent" flow.

The force necessary to produce a flow in a long line of pipe is equal to the resistance. Now if we have a level pipe of uniform cross section and surface, a uniform liquid without change in temperature and a steady flow, the force then becomes equal to what is usually called the "frictional resistance." Frictional resistance is generally independent of operating pressures. It might also be mentioned that frictional resistance is generally indicated by a co-efficient of friction.

Loss of Head in Long Pipe Lines

In any pipe through which oil is being pumped, there is a continuous "loss of head." In other words, as the oil gets farther and farther away from the pump, the pressure that is forcing the liquid through the pipe gradually becomes less and less. The amount of this loss of head depends upon:

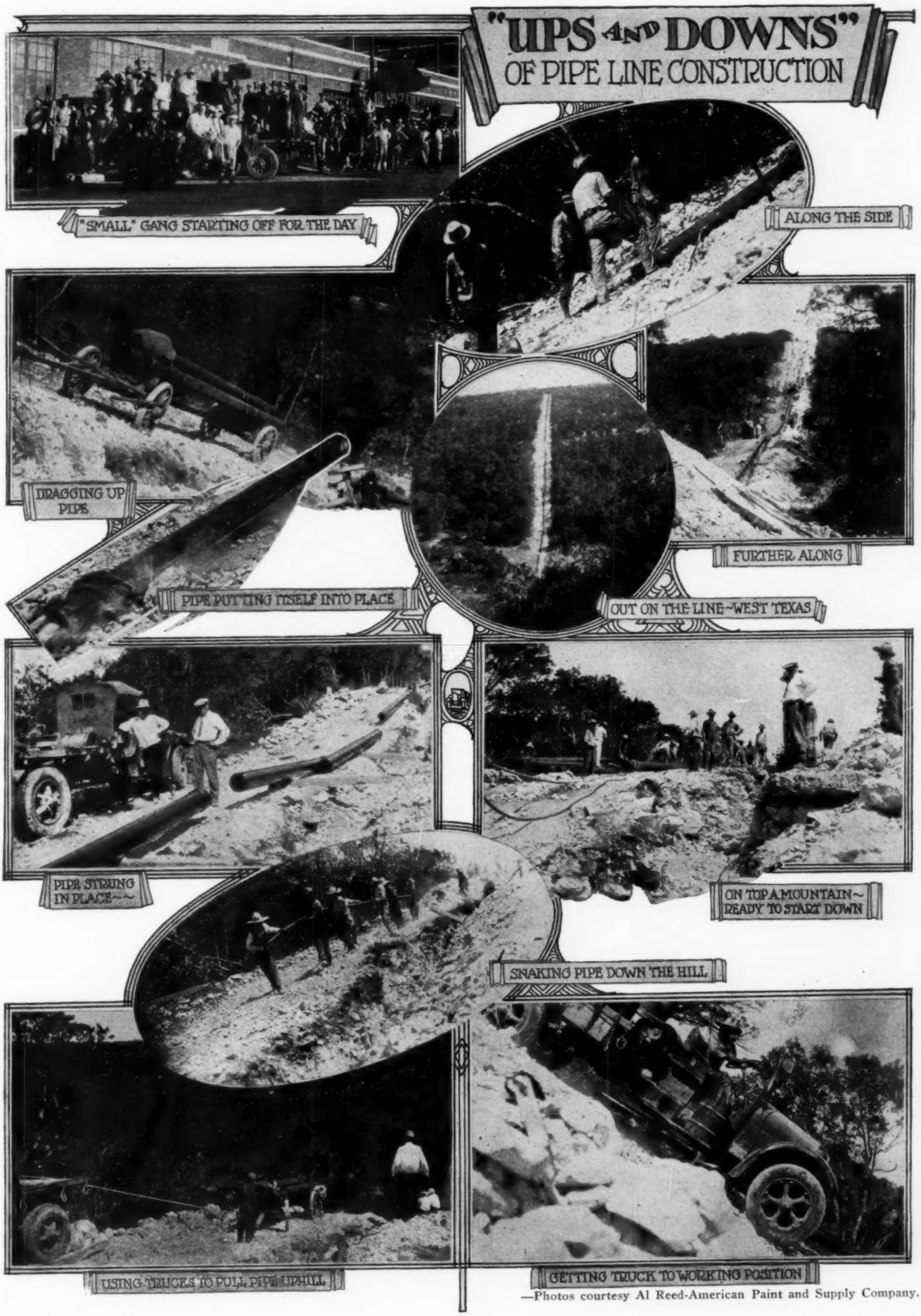
1. The velocity of flow of the oil.
2. The roughness of the inside of the pipe.
3. The size of the pipe.
4. The length of the pipe line.

The last three items are probably the most important and, as the size of the pipe and the roughness inside are almost the same throughout the length of the pipe line, it can be said with fairly practical accuracy that the loss of head in a pipe line increases in the same proportion as the length of the line; that is, if the loss of head is 10 feet in a line two miles long, the loss will be 20 feet in a line four miles long, etc. In all cases, however, additional loss of head arises from curves, elbows, etc., in the pipe line.

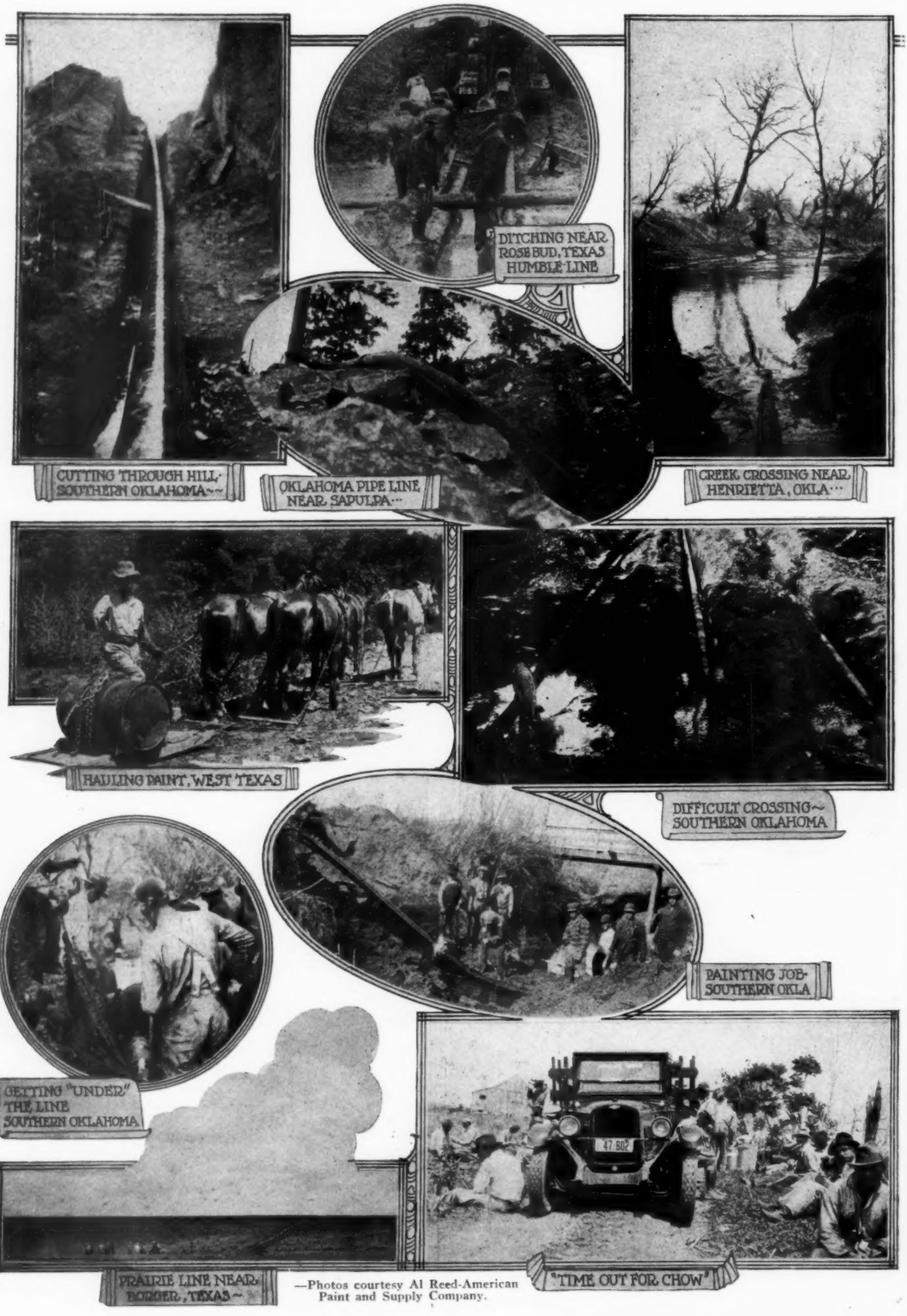
The amount of oil that a particular pipe line will deliver in an hour depends upon the speed with which the oil is being forced through the pipe. Just as long as the stream of oil is flowing smoothly and quietly, the speed with which it moves will become greater with a corresponding increase in pressure. However, when a certain point is reached, an increase in pressure will cause the oil flow to become "choppy" and irregular. This causes the velocity of the oil to decrease and, consequently, less oil will pass through the line. It might be mentioned, too, that the pressure that can be placed upon a line usually depends upon the strength of the pipe and fittings.

When the heavier crudes of the Gulf Coast field, of Mexico, California, Texas Panhandle, Wyoming (last two because of the oil's high cold test), etc., are heated for transportation through pipe lines, the viscosity of the oil is lessened considerably; therefore, more oil can be put through the same pipe line than at ordinary temperatures. The loss in heat of the oil naturally depends upon the temperature of the surroundings and also upon whether or not the earth contains excess moisture. In any case, unless the lines are covered, the drop in the oil's temperature is enormous. If the reduction in temperature is very rapid, this re-

[1] "Results of Saybolt Viscosity Tests on Several Rocky Mountain Crude Oils," OIL WEEKLY, August 26, 1927.
[2] OIL WEEKLY, August 26, 1927.

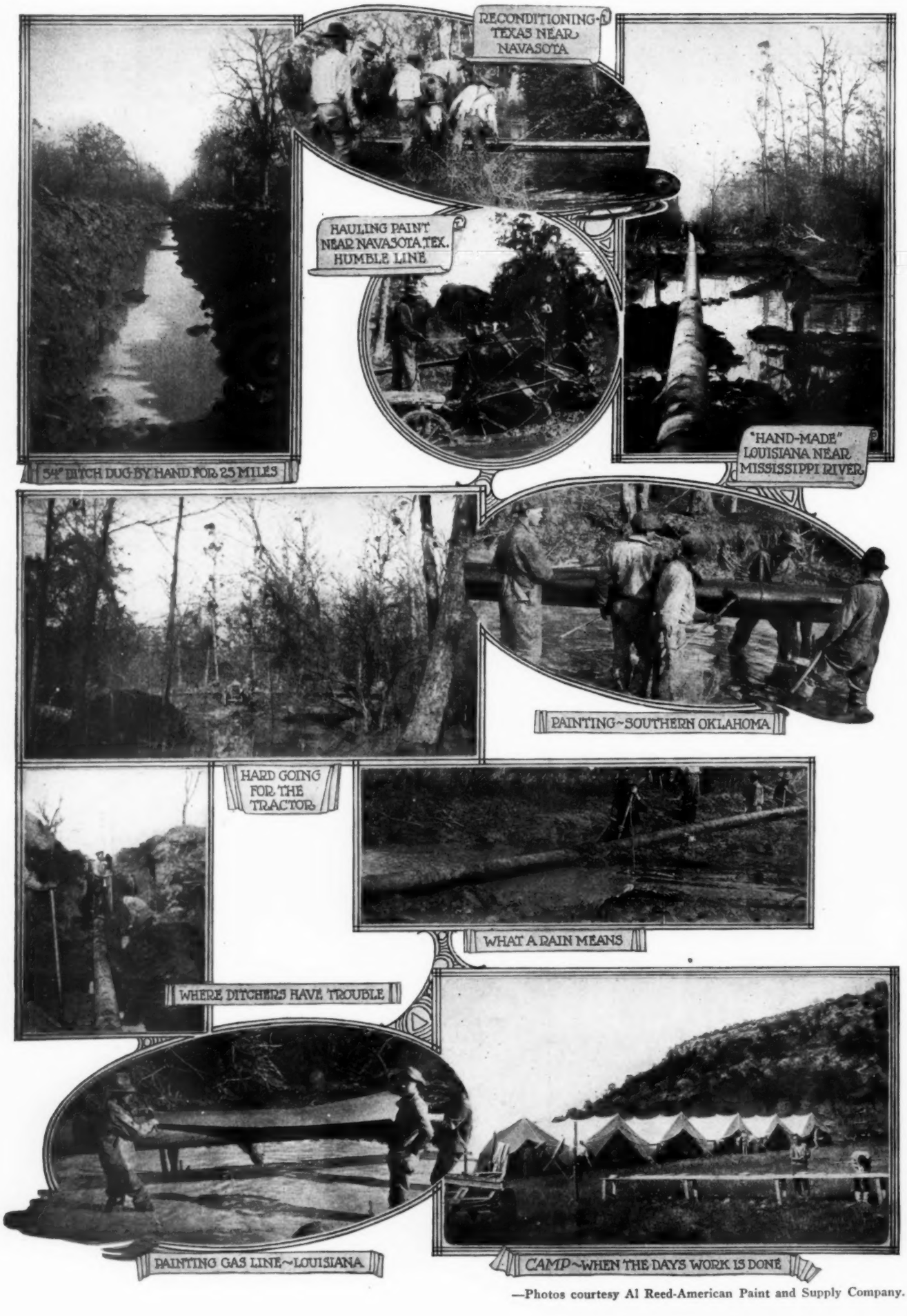

"UPS AND DOWNS"
OF PIPE LINE CONSTRUCTION
"SMALL" GANG STARTING OFF FOR THE DAY
ALONG THE SIDE
DRAGGING UP PIPE
FURTHER ALONG
PIPE PUTTING ITSELF INTO PLACE
OUT ON THE LINE~WEST TEXAS
PIPE STRUNG IN PLACE~~
ON TOP A MOUNTAIN~ READY TO START DOWN
SNAKING PIPE DOWN THE HILL
USING TRUCKS TO PULL PIPE UPHILL
GETTING TRUCK TO WORKING POSITION

—Photos courtesy Al Reed-American Paint and Supply Company.


DITCHING NEAR ROSE BUD, TEXAS HUMBLE LINE
CUTTING THROUGH HILL- SOUTHERN OKLAHOMA~~
OKLAHOMA PIPE LINE NEAR SAPULPA···
CREEK CROSSING NEAR HENRIETTA, OKLA···
HAULING PAINT, WEST TEXAS
DIFFICULT CROSSING~ SOUTHERN OKLAHOMA
PAINTING JOB- SOUTHERN OKLA
GETTING "UNDER" THE LINE SOUTHERN OKLAHOMA
47 602
PRAIRIE LINE NEAR BORGER, TEXAS~
"TIME OUT FOR CHOW"

—Photos courtesy Al Reed-American Paint and Supply Company.

—Photos courtesy Al Reed-American Paint and Supply Company.


RECONDITIONING-TEXAS NEAR NAVASOTA
HAULING PAINT NEAR NAVASOTA TEX. HUMBLE LINE
54" DITCH DUG BY HAND FOR 25 MILES
"HAND-MADE" LOUISIANA NEAR MISSISSIPPI RIVER
PAINTING~SOUTHERN OKLAHOMA
HARD GOING FOR THE TRACTOR
WHAT A RAIN MEANS
WHERE DITCHERS HAVE TROUBLE
PAINTING GAS LINE~LOUISIANA
CAMP~WHEN THE DAYS WORK IS DONE

—Photos courtesy Al Reed-American Paint and Supply Company.

quires the pumping stations and the heating units provided therewith to be closer together.

Factors Affecting Stream Line and Turbulent Flow

The roughness of new, commercial pipe has a negligible effect upon the resistance of the oil to stream-line flow, although this is not the case for turbulent flow. Since stream-line flow is by its nature a shearing process, the viscosity of the oil is the determining factor, and the density of the oil, the negligible factor, in a consideration of frictional losses. Because temperature has such an important effect upon the viscosity of an oil, consequently it is a material factor affecting frictional losses in stream-line flow, this effect of temperature as an influencing factor decreasing as the viscosity of the oil decreases.

Turbulent flow is characterized as being an eddying mass of fluid in which the particles are flowing various and confused paths. In view of the fact that in this condition of flow the fluid is now eddying and the particles are moving in paths that hinder and obstruct lineal flow by impact and collision, the *density* of the oil influences the risistance to flow rather than its viscosity. So, too, the roughness of the pipe (especially in pipe of smaller sizes) will affect the resistance to turbulent flow, this roughness being insignificant in a consideration of stream-line flow.

In reality, viscosity is a measurement of the internal friction of the oil. *Absolute viscosity* is the force in dynes necessary to move a surface of one square centimeter past an equal parallel surface one centimeter distant with a velocity of one centimeter per second, the space between being filled with the fluid, the absolute viscosity of which is sought. This viscosity is expressed in dynes per square centimeter, its unit being the *poise*, which is equal to one dyne per square centimeter. *Kinematic viscosity* is the absolute viscosity divided by the specific gravity of the fluid, the kinematic viscosity of which is wanted.

Figure 1 shows a chart that can be used for transposing from such Saybolt, Redwood and Engler viscosities as are ordinarily encountered to kinematic viscosities. This chart is based upon formulas used by the Bureau of Standards.

The determination of line friction is a very complicated problem. Although it is impossible in an article of this general nature to discuss this phase of the subject in extensive detail, mention will be made of the important work done by Stanton and Pannell[2] on fluid flow and how their results are applicable to a determination of frictional losses in oil pipe lines.

Stanton and Pannell in studying fluid flow in pipe lines derived the following formula:

$$\Delta p = K\frac{W^2}{dD^5}, \text{ where}$$

Δp=Pressure loss in pounds per square inch per foot of length.

W=Weight of fluid flowing in pounds per second.

d=Density of the fluid in pounds per cubic foot.

D=Inside diameter of the pipe in inches.

K=A coefficient which is a function of W, D and u, u being the absolute viscosity in poises.

The curves shown in Figures 2 and 3 give values of K for velocities both below and above the critical velocity. In this connection it might be mentoined that the velocities from

$$V_c = \frac{(25v)}{D} \text{ to } V_c = \frac{(40v)}{D}, \text{ where}$$

v=Kinematic viscosity.

D=Inside diameter of the pipe in inches.

Intermediate values have been omitted from these charts. Further, the units given therein are not consistent with the usual units of volume and gravity used in America, and for that reason Figure 4 is given, whereby the curves there shown may be used to convert usual barrels (42 gals.) per hour into pounds per second for various Baume values. (To use this chart it is necessary to convert degrees A. P. I. into equivalent degrees Baume.)

Figure 5 gives values of d, the density, in pounds per cubic foot.

Figure 6 is a chart for determining the change in degrees Baume for temperatures other than 60 degrees F. The chart represented by Figure 6 gives results that are approximate, but it is sufficiently accurate for pipe line calculations. By means of these charts the usual units of American practice may be readily transposed for use in the Stanton and Pannell formula.

The change in the viscosity of an oil with a change in temperature does not seem to follow any known law, for oils having similar viscosities at one temperature may have widely varying viscosities at another. For this reason, in order to apply Stanton and Pannell's formula in determining line friction loss, it is necessary to know the viscosity of the oil at several temperatures near the temperature expected to prevail in the pipe line under consideration. If the viscosity of the oil at only one temperature is known, the viscosity at the working temperature is then a question of judgment guided by the charts.

H. S. Bell[3] gives the following example of how to find the friction loss in a pipe line, making use of Stanton and Pannell's formula and charts such as are represented by Figures 1 to 6, inclusive:

"Let the following assumptions be made:

Gravity of oil (at 60 degrees F.), 18 degrees Baume.

Average line temperature, 125 degrees F.

Viscosity at 125 degrees, 12 Engler=450 Saybolt.

Length of line, 10 miles.

Barrels per hour, 500.

Diameter of line, 8 inches.

Required the friction loss.

"The gravity of the oil at 125 degrees F. is 21.9 degrees B.=0.9217 specific gravity and the density is 57.9 lbs. per cubic foot. The weight flowing per second is 43.5 pounds. From Figure 1 the kinematic viscosity is 0.90. Since kinematic viscosity =absolute viscosity divided by the specific gravity,

"Absolute viscosity=$0.90\times0.9217=0.83$ poises.

"The ordinates of Figures 2 and 3 are in terms of W/Du, where

W=Weight of oil flowing per second, pounds=43.5.

D=Diameter of line, inches=8.

u=Absolute viscosity, poises=0.83.

Hence the value of the ordinate found on Figure 1 is

$$\frac{43.5}{8\times0.83}=6.56$$

Showing that W is less than the critical velocity and that the flow is stream-line in character.

"The coefficient K, as found from the chart =1.85. Since we now have all the values for substitution in the general formula

$$\Delta p = K\frac{W^2}{dD^5} = 1.85\times\frac{43.5^2}{57.9\,(8^5)}$$

=0.00184 lbs. per sq. in.

Loss per mile=9.7 lbs. per sq. in.

Loss for 10 miles=97 lbs. per sq. in."

In all cases an additional allowance of friction loss due to the resistance of pipe fittings must be taken into consideration. The most convenient way to express this resistance is in equivalent lengths of straight pipe expressed in diameters of the line. Bell[4] gives the following table prepared from experiments to act as a guide in determining the resistance of valves and fittings:

TABLE 1[4]

Resistance of Valves and Fittings

Fitting			
Stream Line Flow			
Under 80°F.			
Over 80°F.			
Turbulent Flow			
Gate valve ¾ open.....	4	8	11
Gate valve ½ open 20		40	100
Gate valve ¼ open 50		100	900
Angle valve, open 20		40	110
Globe valve, open 25		50	135
Bend, 3 diam. radius....	1.5	3	5
Elbow	4	8	35

In order to use this table, the equivalent diameters for the resistance represented by the fittings on the line should be reduced to lineal feet of line and added to the total length. Using the new length, the calculations are made as before.

Of interest in connection with any discussion of frictional losses, pipe line capacities, etc., is the data given in Table 2 showing the velocities required (in feet per second) in different sizes of pipe to deliver various quantities of oil.

[2]T. E. Stanton and T. R. Pannell, "Similarity of Motion in Relation to Surface Friction of Fluids," National Physical Laboratory, London, Collected Researches, Vol 2, pps. 293-320, 1914.

[3]American Petroleum Refining, D. Van Norstrand Company (1923), pps. 338-40.

[4]American Petroleum Refining, page 341.

TABLE 2
Velocities Required (in Feet per Second) in Different Sizes of Pipe to Deliver Various Quantities of Oil
(Courtesy of the Walworth Company)

Bbls. per Day	4"	5"	6"	8"	10"	12"
1,000	.73451	.46774	.32394	.187056	.118662	.08274
2,000	1.47	.94	.65	3.74	.237	.165
3,000	2.20	1.40	.97	.561	.356	.248
4,000	2.94	1.87	1.30	.748	.475	.331
5,000	3.67	2.34	1.62	.935	.593	.414
6,000	4.41	2.81	1.94	1.12	.712	.496
7,000	5.14	3.27	2.27	1.31	.831	.579
8,000	5.88	3.74	2.59	1.50	.949	.662
9,000	6.61	4.21	2.92	1.68	1.07	.745
10,000	7.35	4.68	3.24	1.87	1.19	.827
11,000	8.08	5.15	3.56	2.06	1,31	.910
12,000	8.81	5.61	3.89	2.25	1.42	.993
13,000	9.55	6.08	4.21	2.43	1.54	1.08
14,000	10.28	6.55	4.54	2.62	1.66	1.16
15,000	11.02	7.02	4.86	2.81	1.78	1.24
16,000	11.75	7.48	5.18	2.99	1.90	1.32
17,000	12.49	7.95	5.51	3.18	2.02	1.41
18,000	13.22	8.42	5.83	3.37	2.14	1.49
19,000	13.96	8.89	6.15	3.55	2.26	1.57
20,000	14.69	9.35	6.48	3.74	2.37	1.65
21,000	15.42	9.82	6.80	3.93	2.49	1.74
22,000	16.16	10.29	7.13	4.12	2.61	1.82
23,000	16.89	10.76	7.45	4.30	2.73	1.90
24,000	17.63	11.23	7.77	4.49	2.85	1.99
25,000	18.36	11.69	8.10	4.68	2.97	2.07
26,000	19.09	12.16	8.42	4.87	3.09	2.15
27,000	19.83	12.63	8.75	5.05	3.21	2.23
28,000	20.56	13.10	9.07	5.24	3.33	2.32
29,000	21.30	13.56	9.40	5.43	3.44	2.40
30,000	22.03	14.03	9.72	5.62	3.56	2.48

Likewise, it is interesting for gaugers, pumpers and other construction and operation men to know that:

1 mile of 6-inch pipe will hold 188.7 barrels*.

1 mile of 8-inch pipe will hold 326.7 barrels.

1 mile of 10-inch pipe will hold 515.0 barrels.

1 mile of 12-inch pipe will hold 738.6 barrels.

1 mile of 14-inch O D. pipe will hold 900.8 barrels.

1 mile of 16-inch O. D. pipe will hold 1193.3 barrels.

*All barrels are figured at 42 U. S. gallons each.

Size of Lines and Location of Stations

The topography of the country through which the line is to pass is given consideration, together with the physical properties of the oil and the amount to be handled, in determining the size of pipe required for the line and the distance the stations should be located apart. From the preliminary survey the pipe line designing engineer also obtains necessary elevation data for the profile, which is used in determining the elevations to be pumped against and for plotting a hydraulic gradient. In the case of the lighter crude oils, such as those handled in the Mid-continent region, the size of the pipe used (for trunk lines) generally varies from 8 to 12 inches, in diameter, while the stations are located from 35 to 40 miles apart.

In pipe line construction, a common practice is to lay a smaller line on the high pressure end and a larger line on the lower pressure end; e.g., an 8 or 10-inch line at the end where the pressure is higher, and a 10 or 12-inch line where it is lower. This is done so that the smaller lines will carry the high pressure to such a point where it will be safe to use the larger pipe.

Influencing factors in the consideration of the location of a pumping station are as follows:

1. Necessary, approximate distance for stations to be spaced apart.
2. Proximity to railroads, roads and other means of transportation for bringing in the material and equipment.
3. Location near towns.
4. Desirability of tract as to drainage.
5. Cost of the land.
6. Availability of water.
7. Desirability of the location, general.

In view of the above, distances between stations must be varied slightly because of topographical features and the above mentioned factors that influence the choice of a station site, one of the most important of which is the proximity to transportation facilities. The importance of this latter is due to the fact that, in the construction of a pumping station, a great deal of tonnage must be handled and, hence, transportation charges represent a very large item in construction costs. Usual practice is to buy a fairly large tract of land for a station site at the time when the initial purchase is made. This permits the spacing of the tanks and pumping stations at reasonable distances apart and, further, provides room for any

(Continued on page 116)

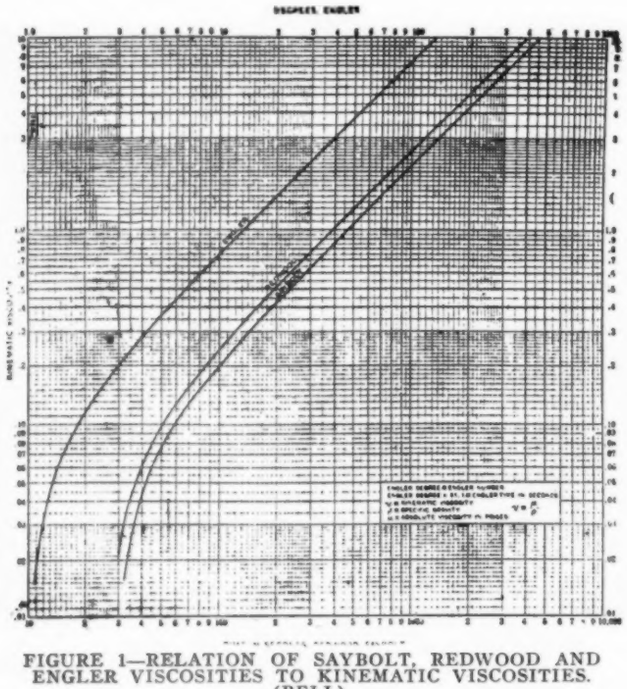


FIGURE 1—RELATION OF SAYBOLT, REDWOOD AND ENGLER VISCOSITIES TO KINEMATIC VISCOSITIES. (BELL).

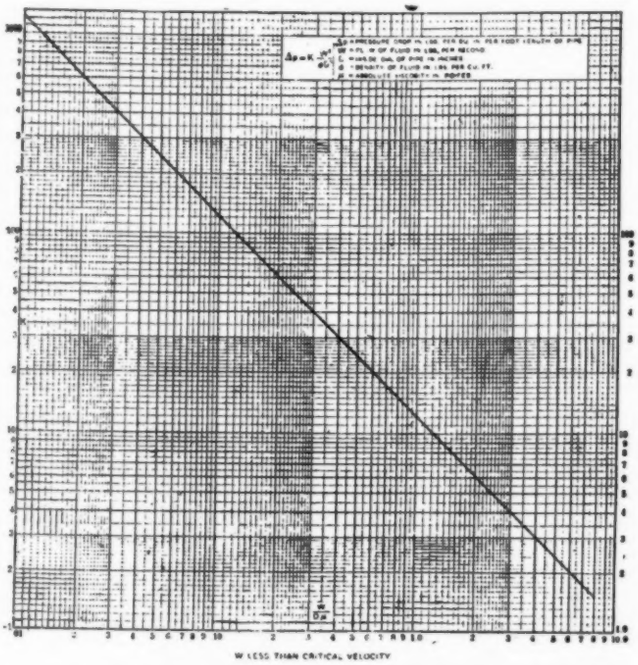
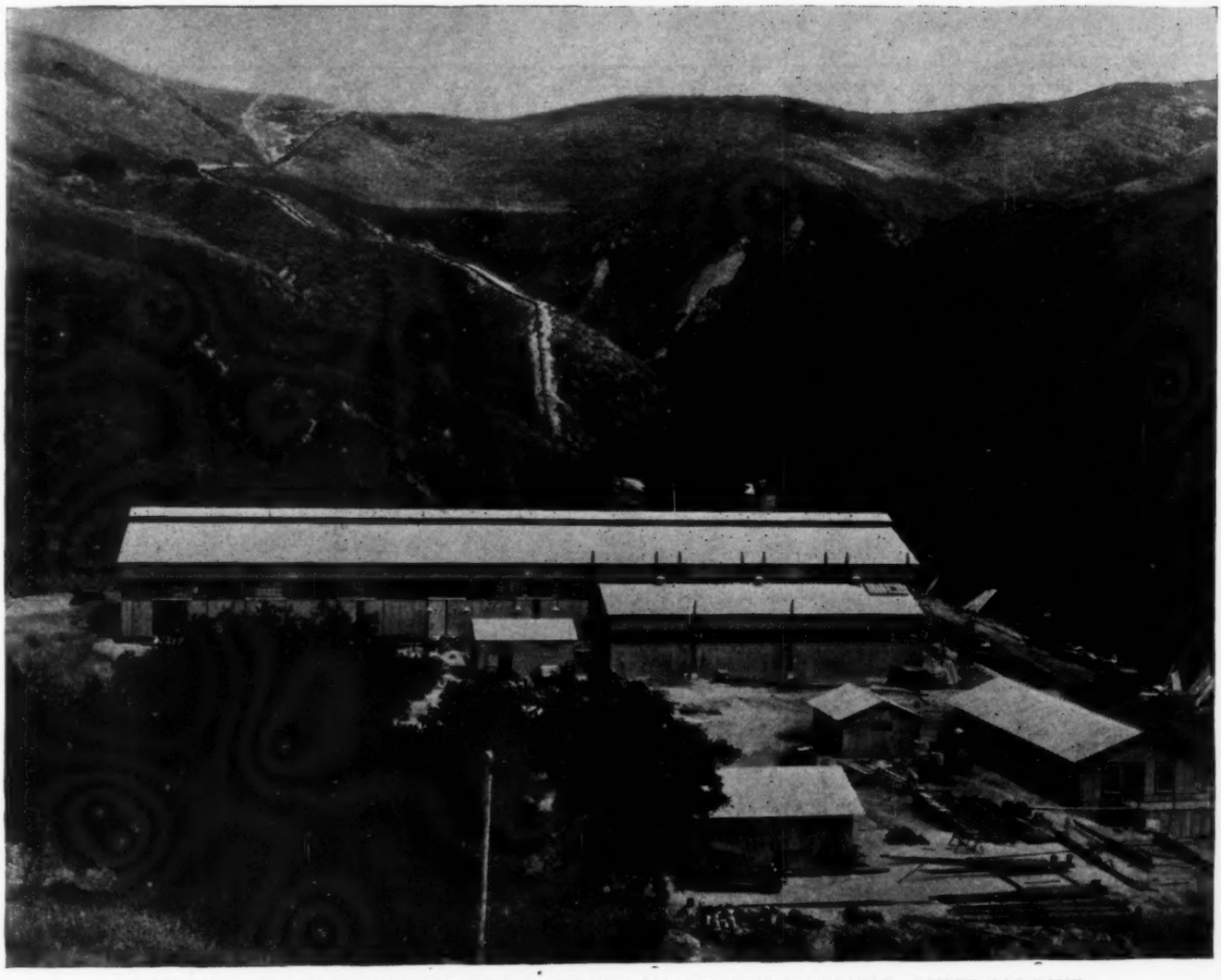


FIGURE 2—W LESS THAN CRITICAL VELOCITY. (BELL).



VENTURA FUEL COMPANY'S COMPRESSOR PLANT ON VENTURA-CALABASAS 15-INCH GAS LINE.

California Experience With Welded Lines Favorable

Development of natural gas industry responsible for bulk of new line construction during present year

By BRAD MILLS
Staff Representative

PIPE line construction in California has been very sluggish during the past year, despite the discovery or development of several oil and gas fields.

The location and potentiality of oil and gas discoveries undoubtedly influence pipe line construction a great deal. It happens that the discoveries during the past year have been contiguous to large oil and gas lines, and new construction, therefore, has been limited. As an example, it may be interesting to note that the several large fields discovered in the Los Angeles basin have required only short pipe lines. Although the Seal Beach field was the only one developed during the past year, any one of the other major fields has occupied a similar position. Had the Seal Beach area been located in an isolated part of the State, several major lines would have been required to handle the flood of crude. Since the field is located only a few miles from the Los Angeles harbor and only a stone's throw from a dozen large refineries, it is not difficult to see why long pipe lines were not required.

The growing demand for natural gas has been the direct cause of the greater part of the pipe line construction finished during the past year. The transportation of this commodity has fast become one of the leading branches of the industry in the State. The industrial growth of Southern California has been almost without parallel and natural gas has played its part along with crude oil.

By far the most important pipe line work of the year was the construction of a combination 15- and 16-inch gas line from the Ventura field to Los Angeles by the Ventura Fuel Company,

(Continued on page 92)

VULCAN STEEL TANK CORP. TULSA, OKLA.

VULCAN TANKAGE
ENGINEERS & MFGRS. of LIGHT & HEAVY STEEL PLATE WORK

Announcement

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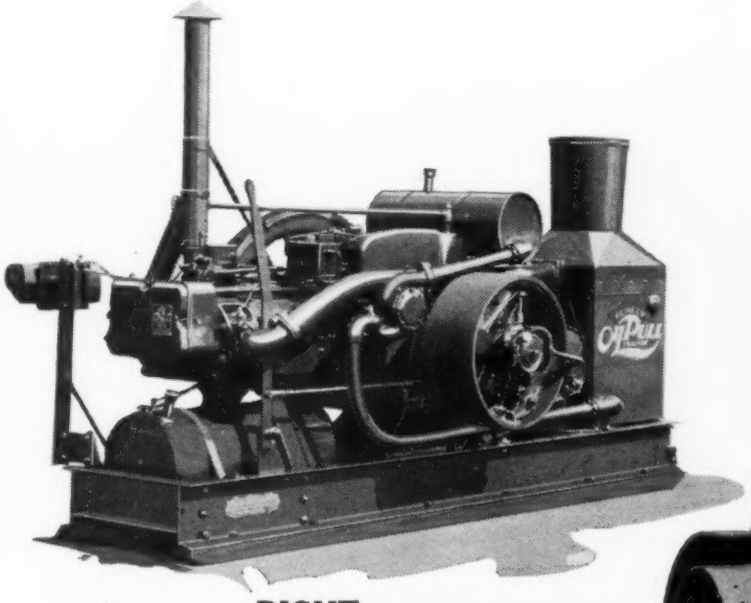
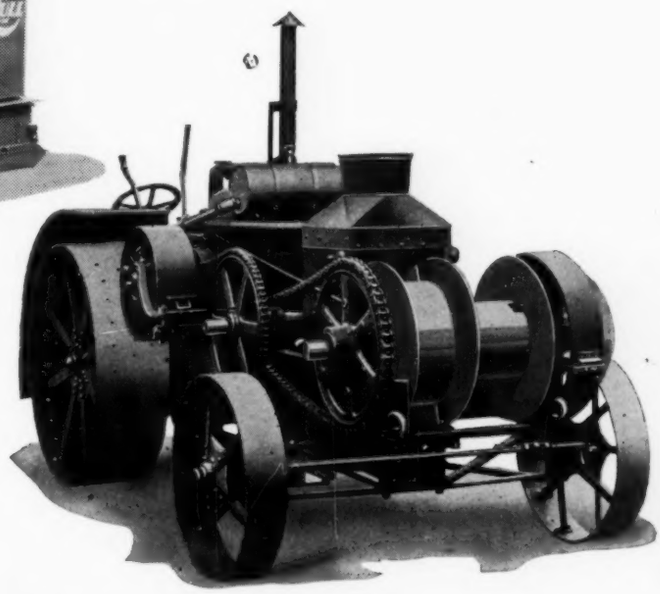


LEFT
A complete unit of power designed to meet any need which may arise in the oil fields. Built in three sizes.



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The first Rumely Oil Pull Winch Tractor ever sold is still in use. **It is the standard of the oil fields. It is used as a basis for comparison throughout the oil industry.**

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California Experience With Welded Lines Favorable

(Continued from page 89)

the Southern Cailfornia Gas Company and the Los Angeles Gas and Electric Company. The line is 73 miles long and follows the coast route, by the way of Calabasas, terminating at West Hollywood, where the Los Angeles Gas and Electric Company's city distribution lines begin. Although laid by three separate companies, the line is distinctly one project and built for one main purpose.

Previously, all trunk lines supplying the Los Angeles basin cities had run by the way of Castaic Junction. The original lines supplying the territory had been laid from Taft and vicinity and had come across what is popularly called the "ridge route" to Los Angeles. The original Ventura line, laid in 1925, took the inland route in order that it could tie in to the old Taft-Midway line at Castaic. The 73-mile line under discussion was, therefore, the first line to take the Calabasas or coast route to Los Angeles from the famous Ventura field.

The 15-inch leg of the line was laid by the Ventura Fuel Company, and is approximately 45 miles long. It begins at the Ventura field and runs to Calabasas, a rugged settlement near the western end of the San Fernando valley. Although a unit in the main line, it was built primarily to deliver gas to the Southern California Gas Company's line, which connects at this point. It is entirely of welded construction and runs over several very rugged chains of hills. Lap welded, 39-pound, steel pipe in random lengths of about 20 feet was used throughout. This type of pipe has given very good satisfaction. The line left the field at almost sea level but climbed to an elevation of well over 1000 feet in several places along the route.

At Calabasas, the Southern California Gas Company continued the line to an intermediate point, 16 miles toward Los Angeles. This company used 16-inch lap-welded steel pipe in 20-foot lengths. All joints were welded and the company reports remarkable success with this method. The average weight of the pipe was 44 pounds per foot. This leg of the line was also laid over a rather ruged right of way.

The remaining 12 miles of the 73-mile line was laid by the Los Angeles Gas and Electric Company. It runs from an intermediate point between Calabasas and Hollywood to West Hollywood. It is also a 16-inch line and is welded in its entirety. The pipe is lap welded steel and weighs about 44 pounds per foot. Like the greater part of the line laid by the other companies, the "home stretch" traverses a very rugged and broken country, which necessitated many bends.

In reviewing the construction of the line as one unit, it is interesting to note that all joints were welded. Many obstacles in welding large size pipe were met and overcome.

The line has a capacity of 50,000,000 cubic feet daily, with an initial pressure of 350-400 pounds. The gas arrives at Los Angeles at about 175 pounds pressure, which is far above the general requirements of the city.

The line is buried to an average depth of two feet. The mean temperature at this depth for the different months is fairly constant, making the problem of expansion and contraction a comparatively simple one.

About three and one-half months were required to lay the entire line, which was constructed during the rainy spring months. Considering the rugged country and the season, remarkable time was made.

The Ventura field, although ordinarily rated as an oil producer, has one of the largest visible gas supplies in the entire West. Gas from the field plays an important part in the industrial development of Southern California.

TYPICAL SCENE ALONG VENTURA FUEL COMPANY'S VENTURA-CALABASAS 15-INCH GAS LINE

Gasoline Line

Another important project of the year was the construction by the Shell Company of a combination four- and six-inch line from the Ventura field to the company's refinery at Wilmington, near Los Angeles harbor. Although ostensibly built for the transportation of natural gasoline, the line could easily be converted into either a gas or oil line in case of emergency. The line is 97 miles long and follows the coast route from the main Ventura field. Sixteen miles of the line is six-inch and the remainder four-inch. The laying of the line was greatly facilitated by the use of 40-foot lengths of pipe. Like nearly all lines of its kind in California, it was entirely of welded construction. American Seamless pipe was used exclusively. One initial pump station is used, with only one intermediate station required.

The greatest elevation encountered was 1600 feet and the lowest was sea level. About 60 working days were required to complete the line. The Shell Company is also an enthusiastic booster of welded pipe lines.

The Midway Gas Company kept pace with the growing needs of Los Angeles and vicinity by laying a 27-mile, 16-inch

(Continued on page 104)

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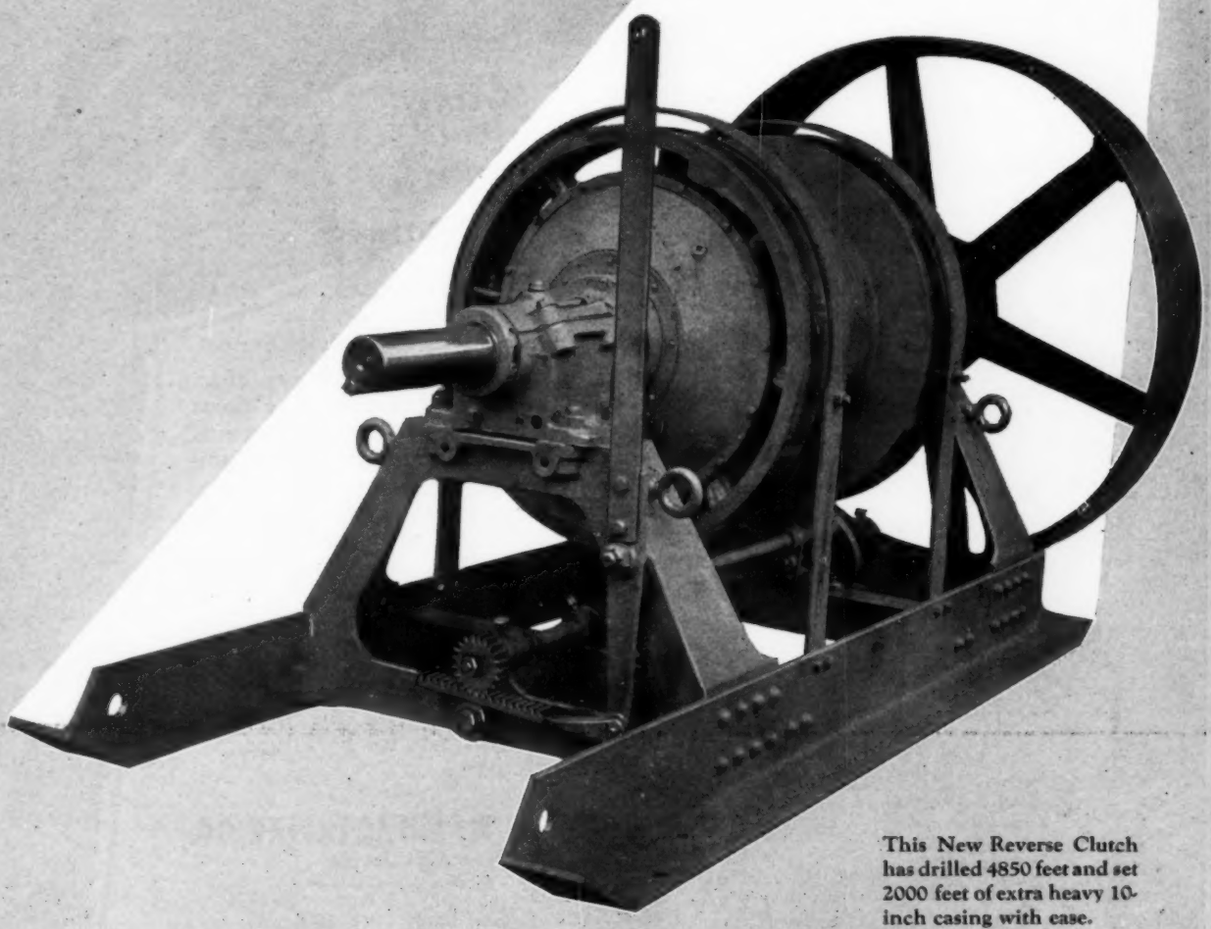

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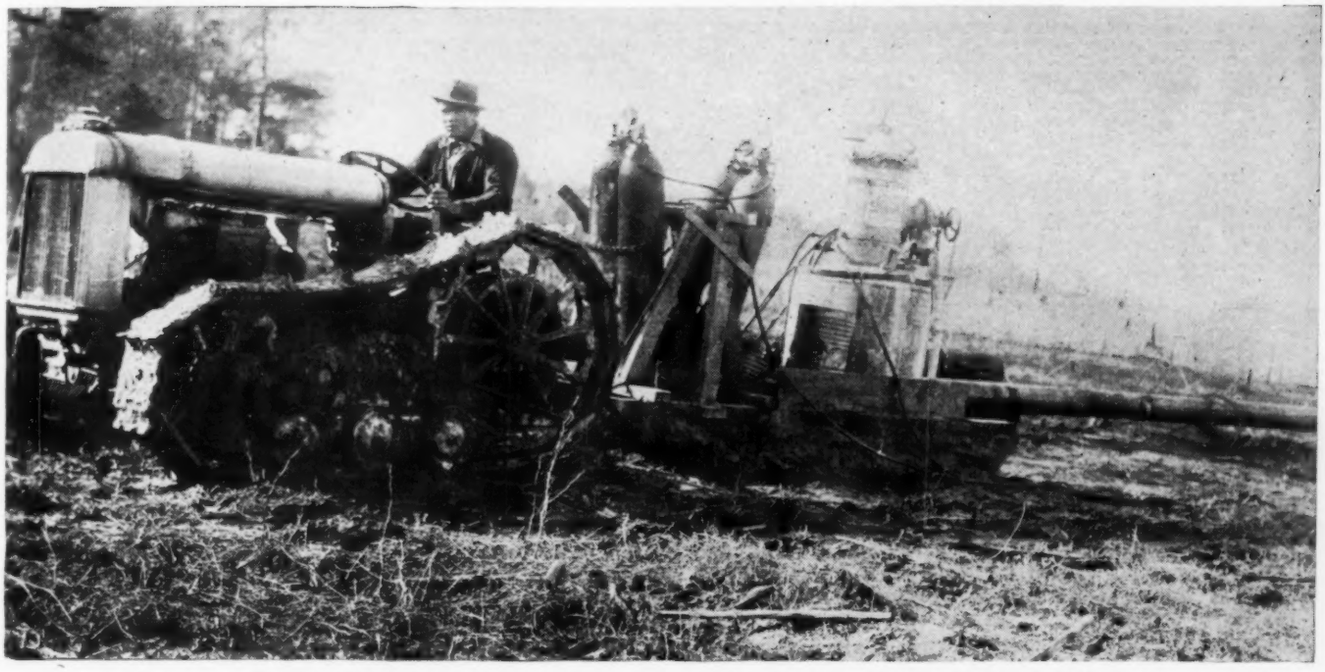


MODERN METHOD OF HAULING WELDING APPARATUS—SCENE IN LOUISIANA

Better Methods Hasten Pipe Line Building

Improvements in machinery have crowded out methods of only a few years ago so more line can be laid by fewer men

By A. R. McTEE
Staff Representative

IN THE gradual evolution of pipe line construction methods during the past few years, many constructive changes have come about. The tendency toward improved equipment has crowded out many of the old-fashioned devices, so that now there is machinery adaptable to practically every pipe-line job. Tasks that were formerly done by hand, requiring the services of many men, are now largely handled by few men with the aid of mechanical apparatus. The result has been a high increase in efficiency, with a corresponding decrease in costs.

Laying a 300-mile line, for instance, formerly required a year or a year and a half, whereas now the job is a matter of only a few months. Where 500 men were necessary in laying a line ten years ago, say 250 or even fewer, can do the work now in about half the time.

These improvements have included all phases of pipe line work, beginning with preliminary handling of pipe for a new line, to taking up and reconditioning lines which have been in the ground for a long time. Pipe line companies have not been slow to use machinery developed to meet their problems; consequently those companies specializing on pipe-line equipment have had all the encouragement needed to stimulate effort in designing new contrivances.

The number of manufacturing concerns devoting all their energy to pipe line equipment is relatively small, however, and apparently there is little competition in this field. The writer would like to be understood in this respect. Where equipment is mentioned, it is not because such equipment is believed to be superior. On the other hand, the purpose of the article is to give facts on the newest improvements in equipment regardless of who makes it. If one company's name appears more than once, it is solely because that company's machinery comes under the "new equipment" classification, and what is said is not to be taken as a brief for any special manufacturer.

BARBER-GREENE DITCHER IN ACTION —TEXAS PANHANDLE

Ditching

Where possible, ditchers are now universally used in putting down new lines. One of these machines can do the work of many men, much faster and better. Where surface conditions are good, the ditchers have little or no trouble. Crawlers give them good traction and they get over comparatively rough ground. Swamps and low lands offer obstinate resistance to the mechanical ditcher, however. Frequently when this kind of right-of-way is traversed, the ditcher is abandoned in favor of picks and shovels. Especially is this true in the coastal country. Much of the ditching in the coastal plain has to be done by hand. Mountainous country also makes hand dig-

BOOM RAISING PIPE FOR RECONDITIONING JOB--NEAR HOUSTON

ging necessary. Most of the ditcher manufacturers have special model machines suitable for oil and gas pipe line work. Throughout the Mid-Continent, ditchers have become very popular, and most of the manufacturers are well represented in the various fields.

Ditchers are also used for "stripping" lines when reconditioning becomes necessary.

Transportation

Getting pipe and equipment on the job is a problem which varies with the locality. Transportation methods range from use of heavy-duty trucks to the humble oxen hooked to sleds. Tractors and trucks are the most common means of hauling, however. On a recent line in West Texas, much engineering ingenuity was required to get the pipe strung, owing to the extremely rugged topography. The right-of-way had to cross several mountains, where even teams and wagons were impractical. Finally a truck with a powerful winch was maneuvered to the top of the mountains and the pipe pulled up on loaded wagons with the winch. The pipe was then strung down the sides by hand power. The pipe screwing machine was carried up and down the mountains by hand also. On this particular job four mules were required to drag a sled with one barrel of paint.

Tractors are particularly adapted to pipe-line service because of their ability to crawl over rough territory. As long as soil conditions are such as to keep the tractors from bogging, they can be used effectively.

Since welded lines have become common, the problem of moving the generating apparatus along the line has been met by the tractor. At first the generators were hauled with wagons and teams, but this method was soon replaced by tractors and sleds. It is usual practice now to set the generators on a wooden sled, which is snaked along as needed by a tractor. From four to eight mules were used to haul one generating outfit by the old method.

Handling Pipe

Handling pipe after it has been strung along the right-of-way has shown perhaps the greatest evolution of any operation in pipe-line building. From raising a few points of line with the old mope poles and horses, where as many as a dozen men were necessary, to handling six or eight joints at one time with one machine and its operator is quite a change, but use of the machine is gaining ground. The mope pole and the various kind of home-made horses are still indispensable under certain conditions, but the pipe laying or pipe raising boom is the latest word in equipment.

The W-K-M boom is built to attach to a Fordson tractor and works from the side. It is within the normal capacity of the boom to handle any size pipe up to and including 18-inch. By adding more counterweights to the balance end of the boom, 20-inch pipe can also be handled.

The boom can be used for handling pipe under any conditions, and by using three or four of the machines together, remarkable speed records can be achieved. By breaking an 8-, 10- or 12-inch dresser or welded line at any point and catching hold of the pipe with the hooks on either side of the break, the boom will lift the first joint high enough out of the ditch to enable skids to be put under it. If a skid be placed under the end of the boom, three or four joints may be raised from the ditch at a time.

The side winch that operates the boom is built largely of standard Ford truck and tractor parts, and has a capacity of 6,000 pounds pull on a single line.

The tractor with a side winch is used in various ways: For pulling pipe into place at crossings it has been found effective. As much as eight joints of 16-inch welded pipe can be handled at one time by this combination. Two or more lines can be used if needed. A winch on the side of a tractor can also be used in making bends in heavy pipe. The joint or joints are held in position by skids wedged into the ditch, or between stumps, and the bend formed by pulling one end of the pipe with a line attached to the winch drum.

Lowering pipe into the trench is now accomplished largely through the

PIPE CLEANING MACHINE WORKING IN CONJUNCTION WITH A BOOM.

KENNEDY

VALVES~PIPE FITTINGS~FIRE HYDRANTS

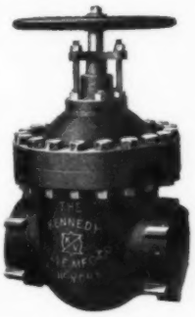
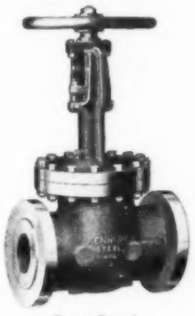


Fig. 781
2500 lb. Test

Fig. 187
700-lb. Test



Cast Steel
Fig. 923

Fig. 27

for oil service

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Fig. 192
1600-lb. Test

Fig. 58
300-lb. Test

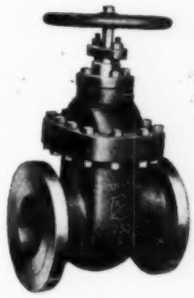


Fig. 76

Fig. 544

Fig. 103

Fig. 301

Fig. 312

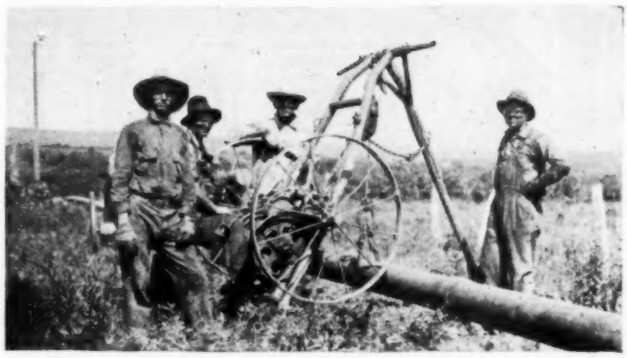
Fig. 324

Fig. 201

Fig. 322

Fig. 492

OLD STYLE HORSES IN ACTION



HOW THE PORTABLE TRIPOD WORKS

use of portable pipe hoisting and lowering tripods, or machines as they are called. There are a few of these made by manufacturers, chief among which is the Wheatly. This machine has two steel rachets which have steel dogs working in ratchets at all times, for safety. Steel gears are used throughout. Clutches are also of steel. The clutches slide on a shaft into the clutch which is welded onto the wheels. The sliding clutches are for the purpose of engaging and disengaging wheels. By pushing a lever the clutches become engaged, thereby transforming the machine into a hoist. When the clutch is disengaged, the machine will roll on wheels and can be pulled along the line with little effort. The wheels are also used for the purpose of a crank for lifting the pipe from the ditch. The machine is capable of lifting up 24-inch pipe, and it can be made as heavy as desired.

Most of the companies have similar tripods which are made in their shops.

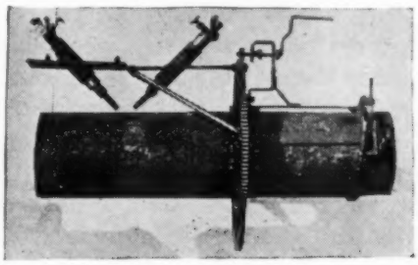
Portability is the outstanding feature of the device. It can be operated with three or four men.

Backfilling

For backfilling either on new lines or recondition jobs, the evolution has been from single hands with shovels to the team pulling a manually operated mormon board, to the tractor operated mormon board and finally the modern bulldozer.

Among the most commonly used bulldozers is the one made by the W-K-M Company. The outfit is attached to any Fordson tractor. On backfilling with the W-K-M bulldozer, the driver runs the tractor backward and forward, changing the line of travel on each backward move so as to engage the full width of the blade with the piled dirt on each forward move. On fairly level ground, the blade is set to wipe the ground clean, and is left stationary. The tractor is driven straight at the piled dirt, which is struck sharply by the blade. The impact starts the dirt in motion, and it can then be shoved as far as desired.

As the dirt is centered over the ditch, the tractor clutch is disengaged, the machine thrown into reverse and backed off for another run, the wheels



WAGNER PIPE CUTTING MACHINE

at the same time being cut so the blade will engage the dirt on the next forward move. The outfit is heavy enough so that it will not bounce up or ride over small obstructions which are to be moved. The raising and lowering mechanism of the blade is rigidly connected to the front axle of the Fordson.

A mormon board combined with the bulldozer, equipped with a side winch, gives an outfit which will backfill under practically any condiiton. The bulldozer is used wherever there is sufficient room or right-of-way for its operation, about ten feet being required. In tight or narrow places, however, where the bulldozer is not permitted, the side winch and mormon board will do the work efficiently. On inclines, the bulldozer blade is used to anchor the Fordson and the side winch and mormon board used to backfill the trench.

Reconditioning

Pipe line companies are learning the economy of reconditioning their lines to forestall deterioration. This work involves uncovering the line, raising it, removing the rust and scale, putting on a protective coating, lowering the line back into the trench and backfilling to cover it.

Operations described above apply to uncovering, raising, lowering and backfilling.

Cleaning pipe after it has been in the ground for several years is an expensive and tedious operation. And yet in any recondifioning program, it is necessary that the pipe be put in shape to receive the new protective coating whatever this may be.

The old method of cleaning consisted of scrubbing the pipe with steel brushes. This was done by hand. In many instances individuals were equipped with small steel brushes, scraping knives, etc., and assigned to a small portion of the line. Then began a scrubbing and scraping process that required much time and more effort. By this method one man can clean a very short section of line a day, and the work is so tiresome that workmen shy away from it as much as possible.

The W-K-M pipe cleaning machine

OLD METHOD OF HANDLING PIPE WITH THE MOPE POLE

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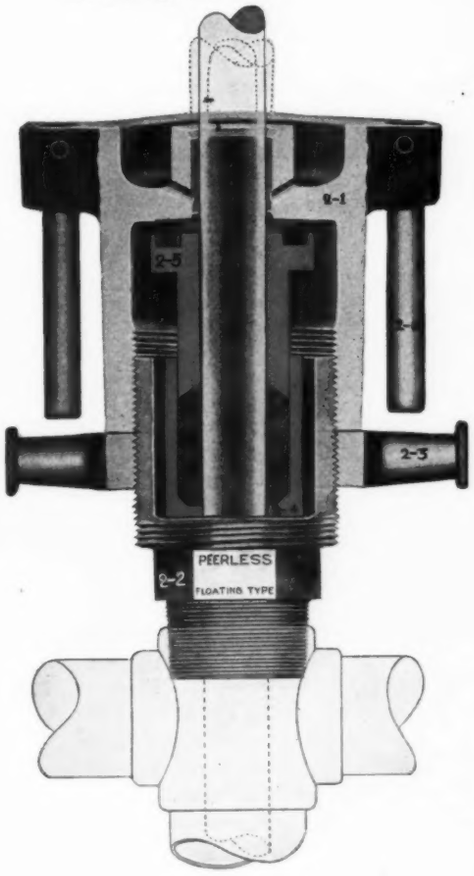

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CLEANING PIPE BY HAND WITH STEEL BRUSHES

represents what has been done to modernize the cleaning job. This machine is now practically universal in its application. It operates mechanically and is virtually automatic. The cleaning is done by a series of sharp-toothed cutting wheels which are revolved rapidly around the outside of the pipe. These cutters pulverize the rust and scale and break it off the pipe in small particles about the size of corn meal.

A series of brushes then clean off all the loose dirt and leave the pipe free from scale.

A light weight gasoline motor operates the machine by revolving the cutting head at the rate of from 100 to to 120 revolutions per minute around the pipe. At the same time the machine travels along the pipe line which has been raised out of the ditch and put on skids.

The machine is made with variable travel speeds so that where pipe is easy to clean it can be made to travel as much as 20 to 30 joints per hour. On the other hand if the scale is very hard the travel speed can be reduced so that as few joints per hour can be cleaned as is necessary to do the best work. Nominal travel speeds of the machine range from two to 10 feet per minute. Travel speed is controlled entirely separate from the speed of the cleaning hand, which rotates uniformly.

Recently the machine has been used to clean mill scale from pipe before it is put in the ground and the outfit works equally as well for this class of work as for cleaning old lines.

A pipe boom for raising and holding the pipe, a cleaning machine to travel along the line and knock off all the rust and scale, and a bulldozer to backfill make as modern a combination of equipment for reconditioning as can be found. With such a combination many times more work can be done than is possible with the average pipe line crew using the old methods.

OLD METHOD OF BACKFILLING

Painting

Painting methods vary according to the kind of coating used. The various paint manufacturers generally have one of their representatives supervise the paint job, but there are no special developments in applying the coating.

Better Methods Hasten

Both hot and cold paints are used. Those requiring heat necessitates kettles and heating apparatus on the job. Hauling this equipment is sometimes a problem, but wherever pipe can be moved, paint can also, so it is largely a matter of choice on the part of the line builders as to which coating will be used. Wrapped lines are common. The wrapping is applied before the paint is put on and generally precedes that operation by a very short time only.

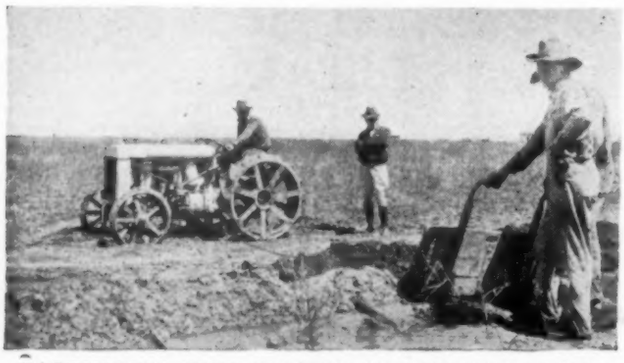
Painting procedure on new and reconditioned lines is alike, except that new lines do not have to be cleaned as thoroughly as do those which have been in the ground before. It is becoming common practice, however, to use cleaning machines on new lines to remove the mill scale.

Cutting Pipe

Each year it is necessary to discard or relocate miles of existing pipe lines. For this class of work a portable pipe cutting machine is available.

Essentially the Wagner pipe cutting machine, as the outfit is called, consists of two gears and a framework so arranged that two Oxweld oxy-acetylene cutting blowpipes are carried around the pipe during the cutting operatioin. When the crank handle is turned, the action of the gears causes the carriage supporting the two blowpipes to revolve about the pipe.

The blowpipes may be adjusted to any angle of cut desired, although 45 degrees is usual. Distance between the cuts may be varied within reasonable limits. By using different sized internal shoes, the machine may be employed on different sizes of pipe: Thus a machine may be used on four-inch, six-inch and eight-inch pipe.



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Crescent Hammered Bit & Jar Steel

Start Runs Through Long Humble Line From West Texas

October 1 set as date for first movement through 355-mile line across most inaccessible and rugged part of Texas

HOUSTON.—Plans of the Humble Pipe Line Company call for oil to be started through its new line from McCamey, Upton County, to Ingleside near Corpus Christi, on October 1. Actual construction on the line has been completed for several days but there is yet some preliminary testing necessary.

This is a combination 10 and 12-inch line and will handle approximately 40,000 barrels daily. Within a short time the line will be looped sufficiently to give it 50,000 barrels capacity. The line originates at Humble's refinery in McCamey and follows the right-of-way of the Kemper-Comyn line to Kemper. From this point the line strikes in a southeasterly direction to Ingleside, a distance of about 355 miles. The line was started about May 15 and completed early this month.

In order to take care of the oil which is to be put through the new line and also the eight-inch line from the Yates pool, capacity of the Kemper pumping station has been increased from 40,000 to 90,000 barrels. Two 25,000 barrel capacity units have been added to the station. Also the original 10-inch line from McCamey to Kemper has been increased by combination eight-inch and a second 10-inch line.

On the McCamey-Ingleside line, 10-inch pipe is used out of the stations over half the distance to the next station. At the half-way point the line switches to 12-inch, giving 10-inch out of the station and 12-inch into the station.

Six Stations

Six stations will be installed. Locations of the three unnamed stations are as follows: Station A, in the southwest corner of Schleicher County; Station B, in the southeast corner of Sutton County; Station C, in the northwest corner of Bandera County, 48 miles north of Sabinal. The other stations are at Lytle, Whitsett, and Skidmore.

Each station is equipped with three 400 horsepower Diesel type engines, direct connected through flexible couplings to 20,000 and 25,000 barrel horizontal triplex reciprocating plunger pumps.

Pumps are located in separate rooms from the engines to insure protection from hydrogen sulphide gas and also from fire.

As far as is known, this step of Humble's to protect against the gas poisoning is the first to be taken in pipe line stations.

Fuel for the main engines will be taken taken direct from the pipe line stream through elevated tanks, to enable operators to keep accurate records of fuel operating costs.

Each station is provided with necessary tankage for checking the incoming stream. Structural steel buildings house the equipment and the manifolds.

Humble used both hot and cold protective coating for the line.

Both because of its length and the country through which it passes, the line ranks among the most difficult ever to be built. Construction problems taxed the ingenuity of those in charge of the line to a degree hardly imaginable by one not acquainted with the country.

Construction Difficult

For instance, about 272 miles of the entire line was laid through rock which required blasting. About three times the usual amount of dynamite was required for this work.

The average length of haul from Kemper to Lytle, about 215 miles, was 50 miles. This was over country so rough and rugged that in many places roads had to be built before equipment could be moved. There were only seven shipping points on the line and pipe had to be hauled to the right of way on trucks. There it was stacked and later distributed by teams.

In Bandera County for 25 miles the line passes through a range of hills of the Edwards Plateau, and just misses the headwaters of the Llano, Sabinal and Hondo rivers. This is one of the roughest sections of Texas, and it was necessary to blast rock and build roads for the whole stretch to get material on the right-of-way. In some places one joint of pipe at a time had to be windlassed up the hills. The slope was such that pipe had to be laid by hand and pipe machines had to be handled by winches on top of the hills to hold both pipe and machines.

Material for the three stations, A, B and C, had to be hauled long disdistances over the country where perhaps no vehicle had ever been before. Station A is 52 miles from a railroad, B is 72 miles and C is 48 miles.

Approximately 850 tons of material was required for each station.

California Experience With Welded Lines Favorable

(Continued from page 92)

gas line from Castaic Junction to West Glendale. The company already had large gas lines running between the points, but needed additional capacity, due to the fact that the main trunk lines from both the Midway and Ventura fields converged at Castaic. The new line, naturally, will handle gas from both fields. This company has standardized on welded lines and has found them most satisfactory for their requirements. The new line was put into service during January and supplies cities in the Los Angeles Basin.

The Midway Gas Company only recently completed a 36-mile, eight-inch gas line from a point between Bakersfield and Grapevine, on its main Midway-Los Angeles line to Tehachapi, a small city in Kern County. The western part of the line traversed the southern end of the San Joaquin Valley and was in sharp contrast to the Tehachapi sector, which was very rough and inaccessible. Lap welded steel pipe was used and all joints welded. The line was built to supply the domestic and industrial requirements of Tehachapi.

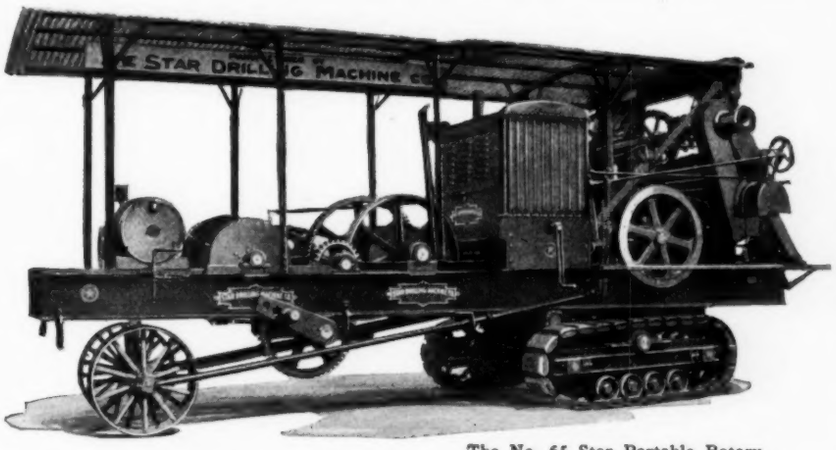
The Shell Company laid two six-inch lines from Dominguez to Wilmington, but they can hardly be classed as major projects. Each line was approximately five miles long. Several short connecting lines have been built in various parts of the State, but they were of nominal size and should be classed as feeders only.

Although pipe line construction has not been extensive in California during the past year, much progress was made and the general technique improved. Particularly was this true in the welding of large pipe. Remarkable time was made in the construction of even the largest lines.

Water Trouble in Gasser Overcome By Milham

Buttonwillow, Calif.—The Milham Exploration Company has overcome some of the difficulties in its Kern 1A gasser by plugging back to 3250 feet. The well was originally drilled to 4660 feet and completed as a 9,000,000 foot gas well. A 30-day test proved unsatisfactory, due to the constant encroachment of water. At the end of the test the gas flow had been reduced to little more than half of the initial output, and in addition, a flow of several hundred barrels of water developed. Gas production has settled to 6,000,000 cubic feet after adjustments.

STARS



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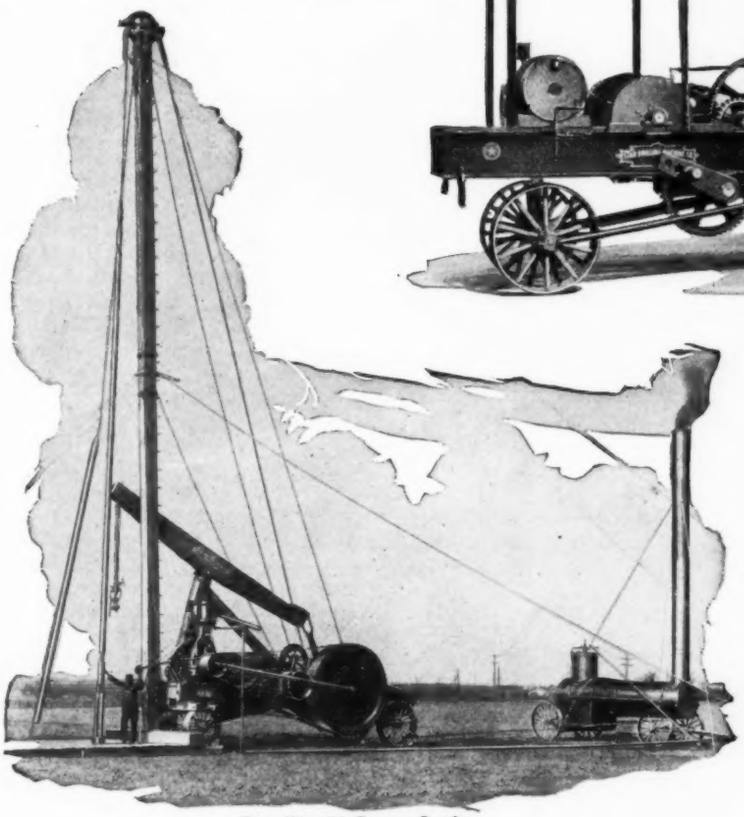

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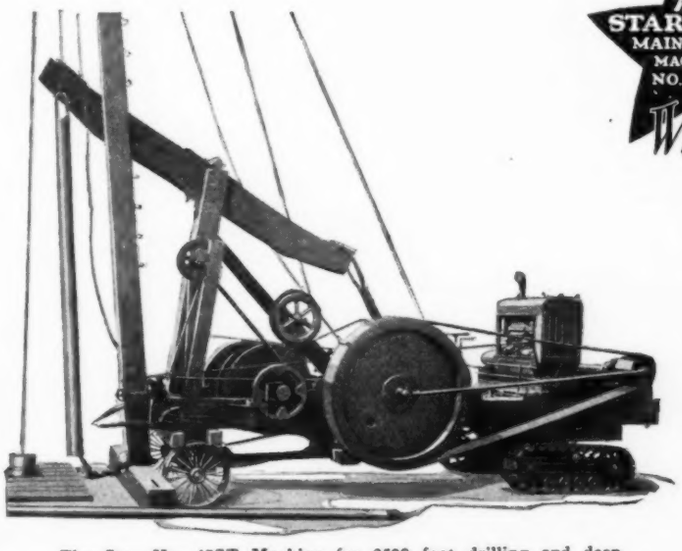

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OIL WEEKLY

California Line Construction Keeps Pace With Oil Development

First line was constructed in 1880 and system has been extended since as required; all lines relatively short

By GEORGE R. ELLIOTT

CALIFORNIA'S 5000 miles of oil pipe lines are included in an area of only 35,000 square miles, situated in the southwestern portion of the State. This is only 6 per cent of the total pipe line mileage of the United States, although California has for some years been responsible for one-third of the national production of crude oil. The reason for the low proportion of pipe lines can easily be understood by a glance at a map of the United States. As in the case of other industries, the Pacific Coast is isolated geographically and has been largely self-contained economically with regard to oil production; also, the California fields are close to tidewater. On a pipe line map of the United States, great trunk lines are seen stretched across the country from the fields of Oklahoma and Texas to the Atlantic seaboard. West of these Mid-Continent States, there is a complete break until we cross the Sierra Nevadas and reach the California system. In California the proximity of the fields to the ocean is so marked in some cases as to be quite spectacular; in the old Summerland field the derricks extend out into the ocean on piling; in the later development at Huntington Beach, the Standard Oil Company drilled a row of wells behind a concrete protection wall, designed to prevent infringement of either oil or ocean upon the proper jurisdiction of the other.

History of Development

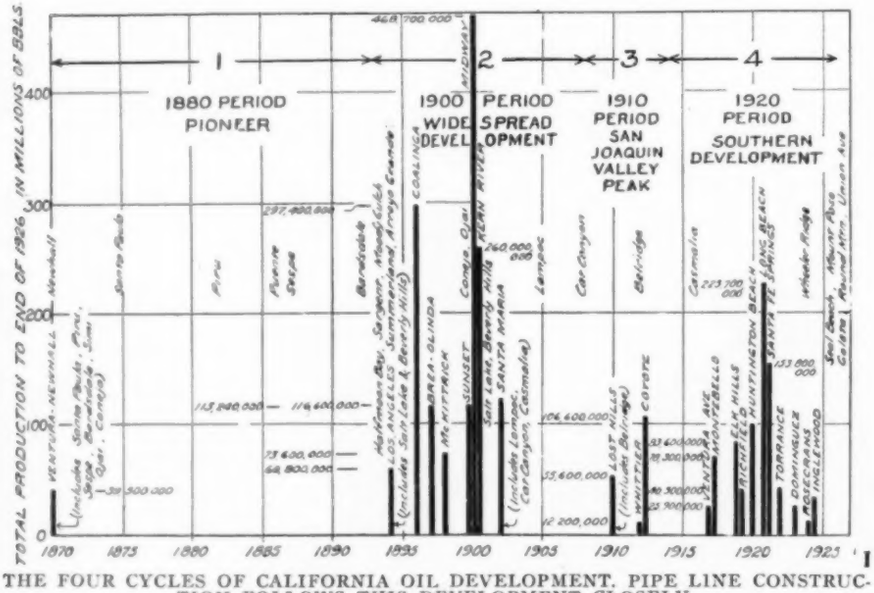
The history of California pipe line development is substantially the history of oil field discovery and development. This history may for the sake of generalization be divided into four epochs or cycles, which for simplicity may be represented by even decades—1880, 1900, 1910 and 1920. The first cycle is the pioneer period, confined to Ventura county; the second cycle is first great period of widespread development throughout the State; the third cycle is the San Joaquin Valley period; the fourth cycle is the southern period.

The first or pioneer period includes the development of the early fields of the Ventura-Newhall district, discovered in the following order:

Newhall	1870
Santa Paula	1875
Piru	1882
Sespe	1887
Bardsdale	1892

The first pipe line constructed in California was from Pico Canyon of the Newhall group. This was a 2-inch line, six miles long laid about 1880, by the Pacific Coast Oil Company to its refinery at Newhall. The second company to construct a pipe line was the Mission Transfer Company, which in 1884-85 built a line 2 inches and 3 inches in size from a small refinery at Santa Paula to the Newhall field. The Santa Paula group of small fields—Timber Canyon, Onlauf Canyon, Adams Canyon, Salt Marsh Canyon—had come in in 1875; also the Tapo Canyon field of the Piru group commenced producing oil in 1882, adding another source of business for the Mission Transfer pipe line. A great historical event next took place; the Mission Transfer Company built a 4-inch line from Santa Paula to tidewater at Ventura. At this time the Pacific Coast Oil Company was shipping oil in tank cars from the Newhall fields to a refinery at Alameda. As soon as this tidewater line to Ventura was completed, the Pacific Coast Oil Company built two tank steamers and commenced to route crude via Santa Paula to Ventura, thence coastwise by tankers; the tank car system to Alameda was discontinued. Thus we have in 1885 in this pioneer system, a miniature of the great trunk lines, tank steamers and refineries of today. The discovery of the Sespe group (Sespe Creek, Little Sespe Creek, Four Fork Creek, Tar Creek) in 1887, added some additional traffic to the Santa Paula-Newhall pipe line. In 1890, the entire line from Ventura to Newhall was taken over by the newly organized Union Oil Company. The discovery of the Bardsdale field in 1892 and the Eureka Canyon field of the Piru group in 1893 may be considered the closing events of the pioneer period.

Later fields of the Ventura-Newhall district were: Modelo Canyon, 1898; Torrey Canyon, 1898; Hopper Canyon (Piru group), 1900; Ojai, 1900; Simi, 1910. These later fields made little impression upon the California oil industry, because they found themselves in a period of large fields as we know them today. The black line in Plate I, representing the total production of 56 years from the entire Ventura-Newhall district, is almost insignificant. The 40 million there indicated is approximately equal to one year's production from the single five-year-old field of Long Beach. But to the oil industry that black line means more than 40 million barrels of oil. The period of early development in Ventura was the cradle of the industry; to those old Pennsylvania pipe liners, who used to ship their pipe from the east around the "Horn," and who pioneered a new country, adapting their Pennsylvania methods to California conditions, the industry owes much.



THE FOUR CYCLES OF CALIFORNIA OIL DEVELOPMENT. PIPE LINE CONSTRUCTION FOLLOWS THIS DEVELOPMENT CLOSELY.

Middle Period

If we refer to Newhall as the beginning, the second cycle might be called the great middle period, if we think merely of time. If we think of big development on the scale we know now, the second cycle should more accurately be termed the beginning of the big fields. The eight-

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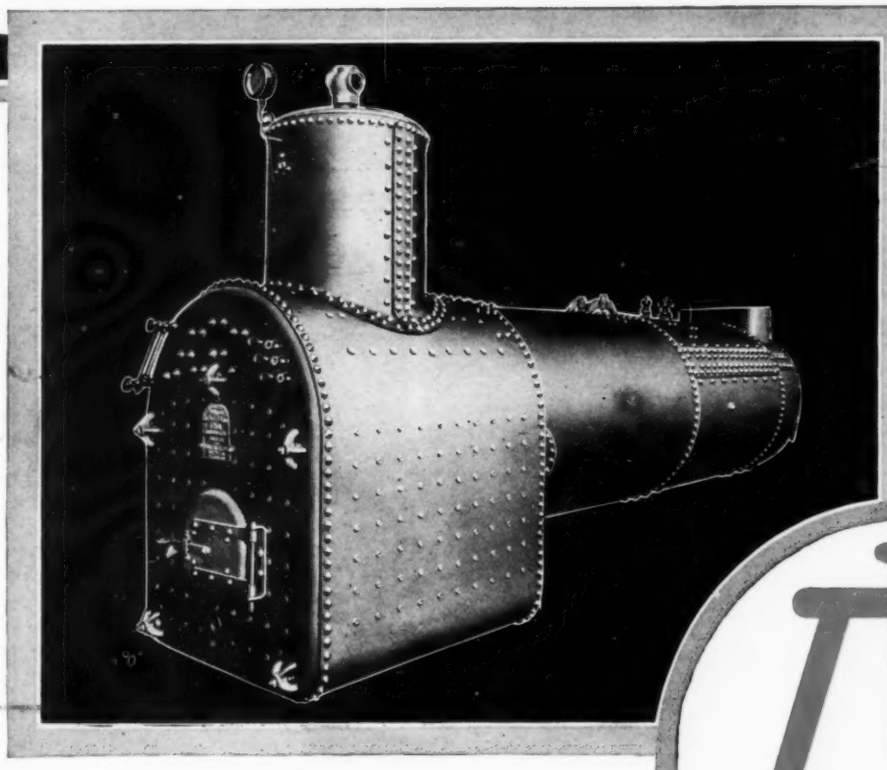

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CONTINENTAL

Say you saw it in The OIL WEEKLY

year period from 1894 to 1902 includes the discovery of the three fields representing the greatest total production to date in California—Midway, Coalinga and Kern River. We have called Ventura County the cradle; when the growing child left the cradle it very rapidly took in a vast sweep of territory, including Los Angeles and Orange Counties, the San Joaquin Valley and the coast from Ventura to San Francisco.

The first important pipe line of the second period was constructed in 1897 by the Union Oil Company from its Los Angeles refinery to Brea-Olinda, the first large southern field. There had already been some smaller pipe line construction, a 2-inch line from the Puente field, the first field in southern Los Angeles County, to the refinery of the Puente Oil Company at Chino.

The first oil field in the San Joaquin Valley was Coalinga; the same year, 1900, saw the discovery of the Midway field. It was neither of these, but the Kern River field, discovered four years later, in 1904, which, due to its more rapid development, stimulated the first great trunk line plans for the San Joaquin Valley. In 1902-03, the Pacific Coast Oil Company, controlled by the Standard Oil Company (New Jersey), constructed an 8-inch line 280 miles long from the Kern River field to its refinery at Richmond, on San Francisco Bay, with a 6-inch branch 29 miles long to the Coalinga field. The year this line was completed, 18 million barrels of oil came out of the two fields, Kern River and Coalinga; this was exactly 75 per cent of the total production of the State, and no discussion of oil topics in California at that time could omit Kern River and Coalinga any more than exactly 20 years later could the same sort of discussion omit Long Beach and Santa Fe Springs. We may call Kern River and Coalinga the first great headliners. The Midway-Sunset fields, whose total production to the present dwarfs all the rest, were in 1903 still in the tank car class with a production for the year of 380,000 barrels.

The blank space on the chart between the years 1902 and 1910 indicates the absence of important new discoveries; however, this was a period of pipe line development both in the San Joaquin Valley and the Santa Maria district. In 1903-04 was constructed the second big pipe line in the San Joaquin Valley; this was a 6-inch line from the Coalinga field to Monterey on the coast, 110 miles, for the Coalinga Oil & Transportation Company. It was called the "Matson" line, because the man responsible for its construction was Capt. William Matson of Hawaiian sugar fame. The Matson sugar vessels were thereby not only provided with a return cargo to the Islands, but were able to deliver a greatly needed fuel to the Hawaiian industries. The route of this line lay across the mountains instead of along the valley floor, as the previous lines, and thus presented many new engineering problems. In 1905 the Matson line was sold to the Associated Oil Company.

The Santa Maria field was discovered in 1902, and when in 1905 the field produced three and one-half million barrels, the Pacific Coast Oil Company constructed an 8-inch line, 32 miles long, to Port San Luis; this line some years later was taken up. About the same time the Union Oil Company laid an 8-inch line to the same port. A 3-inch and 4-inch line was carried south from the Santa Maria field to Gaviota by the National Oil Transportation Company; this line was taken over by the Associated Oil Company at the same time as the Matson line. Three years later, during the peak of production at Santa Maria, the Associated replaced the Gaviota line with an 8-inch line.

TRUNK PIPE LINES OF CALIFORNIA

II

Water and Rifles

Returning to the San Joaquin Valley, we find in 1907 the two fields, Kern River and Coalinga, still producing over half of the State total. In 1907-08, the Associated Pipe Line Company, owned jointly by the Associated Oil Company and the Southern Pacific, constructed an 8-inch line from the Kern River field to Port Costa, on San Francisco Bay. A scheme was tried in the attempt to do away with intermediate stations at 15-mile intervals and the heating of the heavy Kern River oil, as was done on the Standard Oil Company line. Rifled pipe was used and 10 per cent water was added to the crude. This method was later given up and the rifled pipe replaced with smooth. In 1907, the Midway-Sunset fields were not yet making over 2000 barrels per day, but the Standard Oil Company prepared for the big future production with an 8-inch branch line, which was extended to the McKittrick field. McKittrick at this time had three times the production of Midway-Sunset, but it did not enjoy this advantage long. Another of the big companies had its eye on Midway-Sunset; the Associated Pipe Line Company, already in the Coalinga field, extended its line to take in McKittrick and Midway-Sunset.

During this great second cycle of development, the fields now situated within the limits of the city of Los Angeles found a place on the map. The "Los Angeles city" field first became a producer in 1894, and in 1901 the Salt Lake and Beverly Hills fields were discovered. The peak from these fields was 5 million barrels for the year 1908, and was all handled by the Amalgamated Oil Company (afterward absorbed by the Associated Oil Company), through an 8-inch line to its refinery seven miles away in the old part of the city.

Cycle No. 3

The next logical grouping is the period 1909 to 1914, cycle No. 3. This period is the heyday of the San Joaquin Valley and includes within it the following production peaks: McKittrick, 1912; Coa-

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J·J·McCRAW
E·V·SINCLAIR
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JOHN Y·MURRY
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linga, 1914; Midway-Sunset, 1914. The greatest year in the valley was 1914, the production of that district amounting to 80 million barrels out of 103 million barrels for all California. The most important pipe line development of this period occurred in 1910; the Union Oil Company combined with the Independent Oil Producers' Agency to form the Producers' Transportation Company; the new organization constructed an 8-inch line from the San Joaquin Valley to Port San Luis; branches were laid to all the fields of the valley and the total length was 220 miles. From 1909 to 1910, the combined Midway-Sunset production jumped from 4 million to 20 million. The sensational Lakeview gusher of the Union Oil Company put on its wild performance in 1910 and not only materially assisted in boosting the production of the field, but focussed the eyes of the world on the San Joaquin Valley. During the two years following, the Standard and Associated all increased their valley facilities. The Standard doubled its 8-inch line to Richmond, and built an 8-inch branch to the Lost Hills field, which produced its first oil in 1910; the Union doubled its 8-inch line to Port San Luis; the Associated doubled its 8-inch line to Port Costa and laid 8-inch branches to Coalinga and McKittrick.

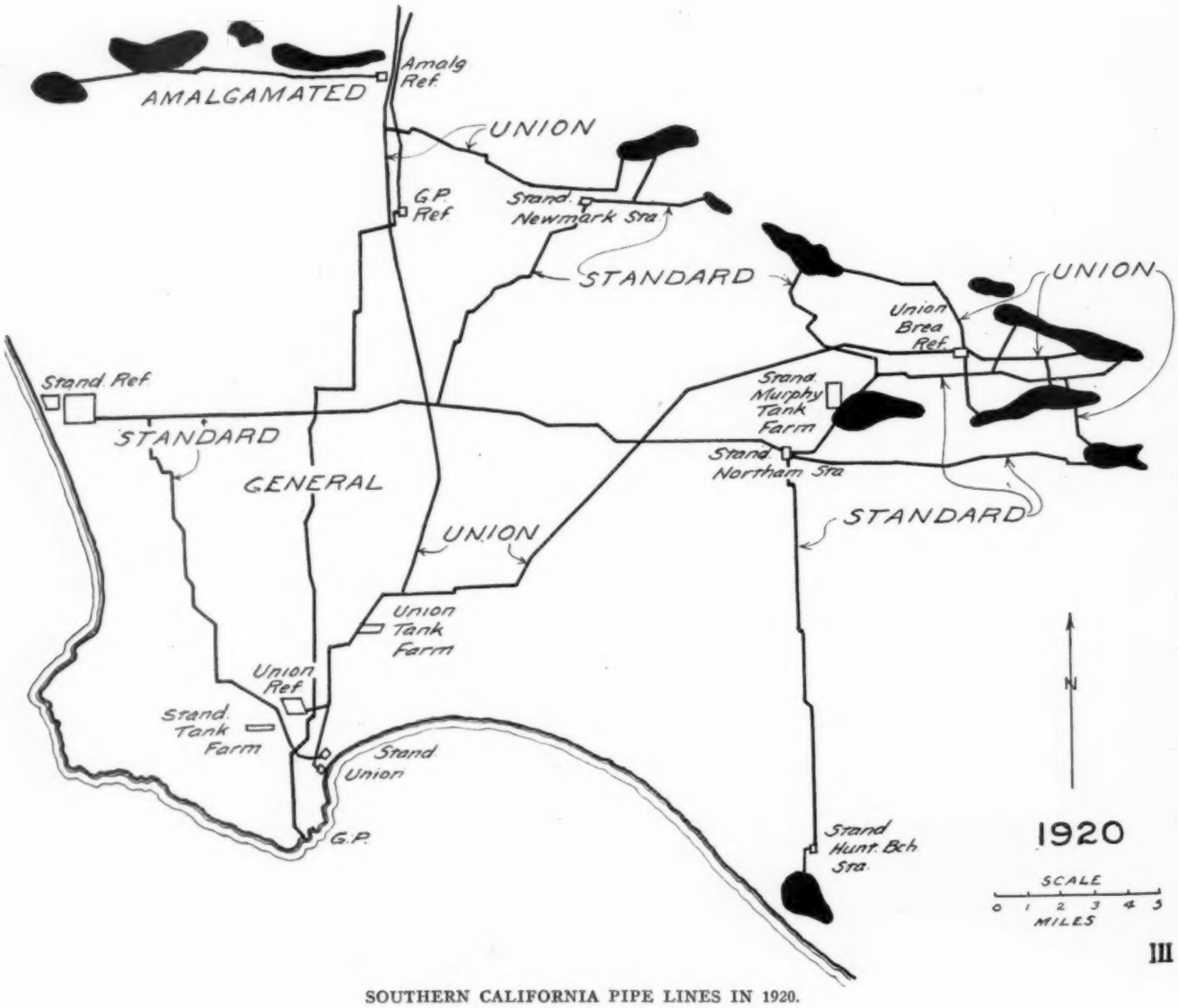
Before closing the chapter referring to the third or "1910" period, which we have noted as the period of big production in the San Joaquin Valley, we may record the entrance of the other two members of the "Big Five" group of older companies. In 1912-13, the General Pipe Line Company, owned by the General Petroleum Corporation, constructed the first line over the Tehachapi Mountains. This was an 8-inch line from the Midway-Sunset field to the General Petroleum refinery at Vernon (Southeast Los Angeles); with a branch from Lebec to the Santa Fe Railway at Mojave, the total length was 212 miles. In 1915, the Valley Pipe Line Company constructed an 8-inch line 170 miles from Coalinga to Martinez, on San Francisco Bay; the Shell Company held control, and in 1918 took over the company.

Fourth Period

With period No. 4 we enter upon a distinctly new era. This cycle includes the discovery of the great southern fields. Compared with Midway-Sunset or Coalinga, these southern fields are not vast in area, but are remarkable for: 1. Great thickness of oil sands, resulting in high initial production, and, where not closely drilled, in slow decline. 2. High gravity oil, making the southern production more valuable than that from the valley, and having a more violent effect upon the nation's gasoline market. From 1917 to 1926, 14 fields were discovered in California; only one important field (Elk Hills), was located in the San Joaquin Valley, although in 1916 the valley fields had produced exactly 75 per cent of the California total. By 1926 the production situation had completely reversed itself, and the southern fields were producing the 75 per cent.

The first field in this period to stimulate pipe line development was Montebello, which came in during 1917. The Standard Oil Company had in 1911 constructed a 6-inch line, 23 miles long, from its El Segundo refinery to its main gathering station at Northam; this station was handling the oil from Brea-Olinda, already 20 years old, and from the Whittier and Coyote fields, both discovered in 1912. A 6-inch branch from the El Segundo-Northam line handled the Montebello production at this time. The Union also extended its lines from Brea to take care of Whittier and East Coyote.

The most significant discovery in this



III

SOUTHERN CALIFORNIA PIPE LINES IN 1920.

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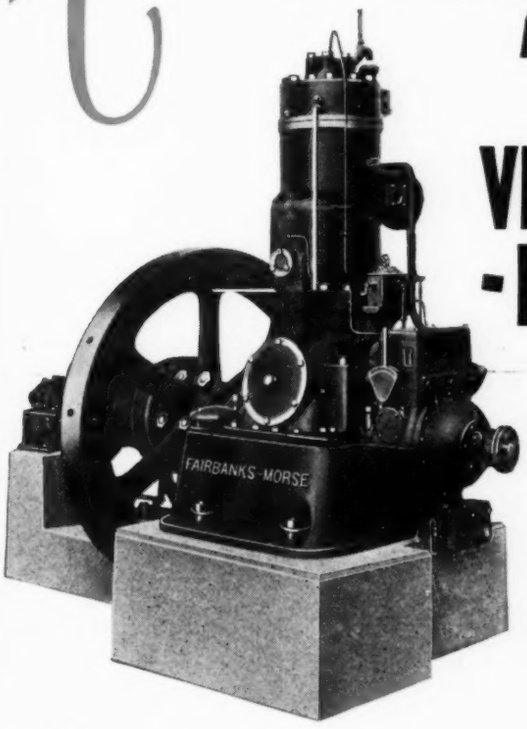

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period was the discovery of the Huntington Beach field in 1920, by the Standard Oil Company. The reason it may be called the most significant is because it opened the way for the eventual discovery of five other fields similarly situated along the same fault zone. The Standard constructed an 8-inch line from its Northam station to Huntington Beach, and as the field developed the following pipe line companies became represented: Shell Company, California Petroleum Corporation (through its subsidiary, Petroleum Midway Company), Pan-American Petroleum Company.

More Companies

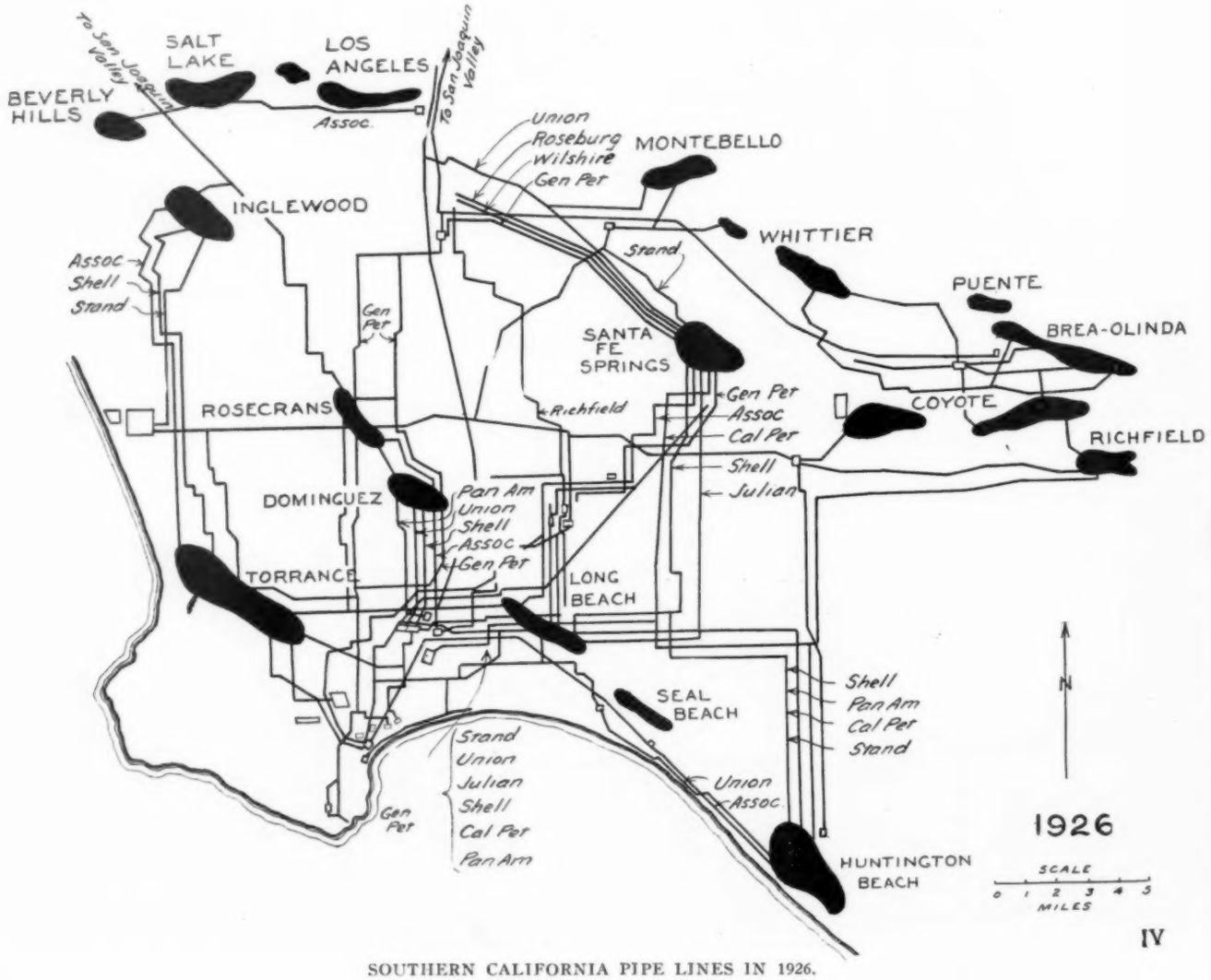
Before touching on the hectic events of 1922 and 1923, it may be noticed that the original "Big Five" pipe line companies were joined in this period by California Petroleum Corporation, Pan-American Petroleum Company and Richfield Oil Company, as well as by companies having much smaller refinery capacity than these—Wilshire Oil Company, Julian Petroleum Corporation, Rio Grande Oil Company. The two maps of the pipe lines of Southern California show how the comparatively simple system of 1920 became an intricate network during the next six years. It is easy to believe the stories of the work of pipe laying being temporarily suspended along congested portions of the right-of-way, until they got the various lines untangled. It was something like the situation in which the three Scotch-Canadian fishermen found themselves, as they zig-zagged their way home on a dark Saturday night, having made more or less complete rounds of the saloons. One of the bibulous three was called "Red Dan" McDonald. By some mysterious instinct they succeeded in arriving in front of "Red Dan's" residence, but seemed in some doubt regarding what to do next. The soberest of the three made his way to the door and rang the bell. Mrs. Dan opened the door and the good Samaritan, propping himself against the doorway, asked: "Is thish where Red Dan lives?" Mrs. McDonald had no doubts in the matter, and said so. "Well," said her caller, "C'm out 'n—hic—pick out Red Dan."

The other two fields of the trio, which disorganized the United States oil market in 1923, were Long Beach and Santa Fe Springs. To name a list of the companies which have handled oil from both of these fields, would be a complete "who's who" of pipe line companies. For the year 1923, Huntington Beach, Long Beach and Santa Fe Springs alone produced the enormous total of 183 million barrels, about three-quarters of the production of the State. Among unusual conditions in pipe line movements was that oil was shipped in tankers to San Francisco Bay and pumped back to tank farms in the San Joaquin Valley.

In 1925, a great trunk line placed the Pan-American among the big pipe line companies; 137 miles of 10-inch welded line from the Midway-Sunset over the "ridge" to its refinery at Watson, near Wilmington, paralleling the General Petroleum line laid 12 years before. This was the first line equipped with Diesel engines, was the first all-welded line, and was the first trunk line from the San Joaquin Valley without provision for heating heavy crudes. The same year the Associated laid its two submarine loading lines at Monterey and Ventura. The Monterey lines were 8-inch and 12-inch in parallel; the Ventura line was one 10-inch; both were 3000 feet long. This submarine feat is a story in itself.

The Ventura line calls attention to the Ventura Avenue field; this field was discovered in 1917, but it was not until 1925 that the deep, highly-productive zone began to cause important increase in field production figures.

Five more fields were discovered in the Los Angeles basin after 1921, the discovery year of Long Beach and Santa Fe Springs. These were Torrance, Domin-



IV

SOUTHERN CALIFORNIA PIPE LINES IN 1926.

(DUNN TOOLAGRAM)

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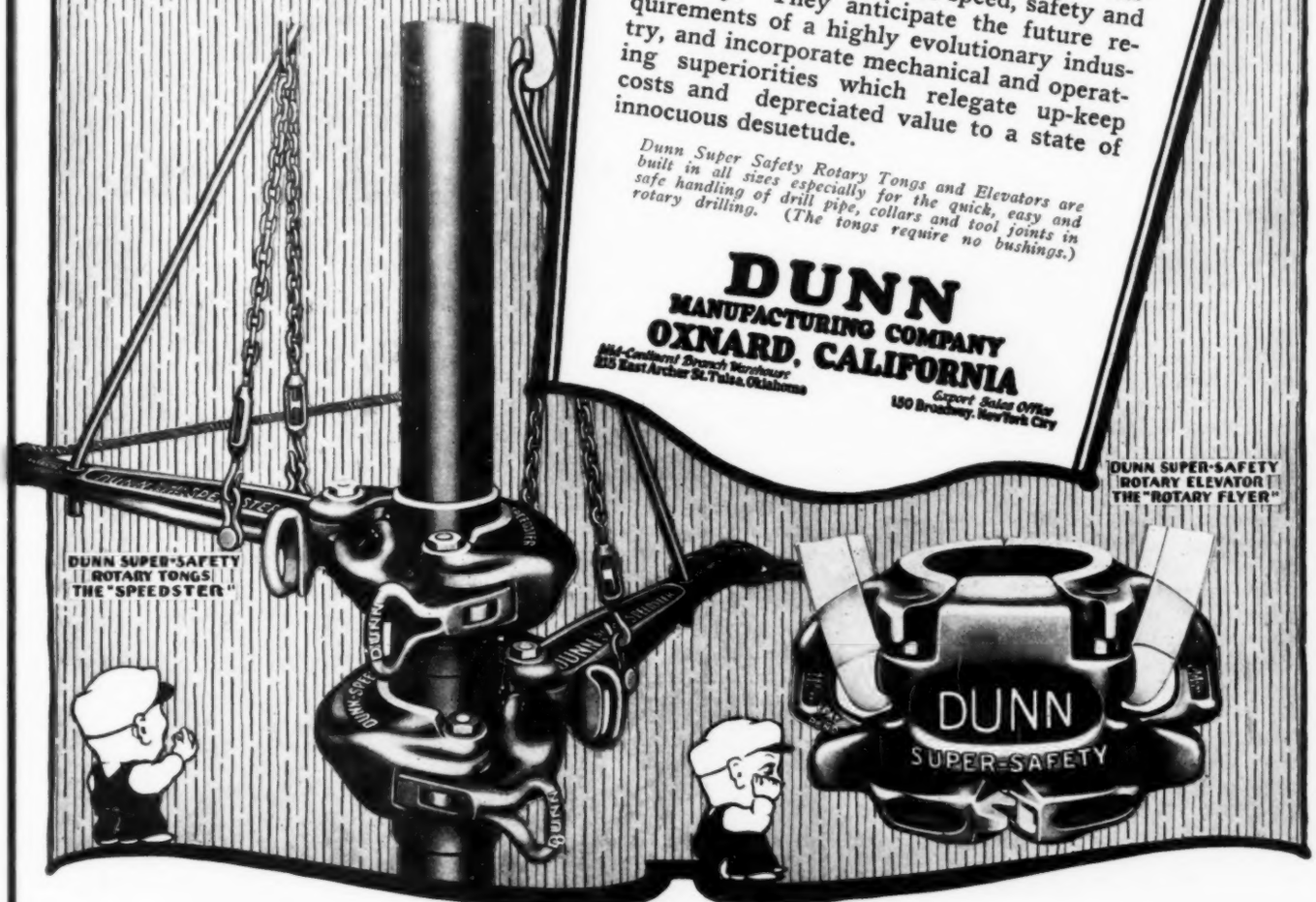


guez, Rosecrans, Inglewood and Seal Beach; they average one per year and bring us to 1926. The second half of 1926 shows indications of commencing another new cycle, as distinct from No. 4 as it was from No. 3. Since Seal Beach, four fields have been discovered, three in the San Joaquin Valley and one on the Santa Barbara Coast; if we count gas fields, Buttonwillow may be added, making four in the valley. Whether the San Joaquin Valley will in a few years again be the greatest oil producing district in California, is an interesting subject for speculation.

Twelve Teams Assured for First Aid Contest

(Continued from page 63)

ing workman as follows: Lacerated wound on abdomen four inches long on level with and one inch to right of navel, running toward joint of hip; simple fracture at lower third of right arm; wound in left groin two inches long, bleeding in spurts, dislocation of jaw. (Working time eight minutes).

5. Pumper falls through power wheel and receives the following injuries: Simple fracture of lower jaw; compound fracture of middle right thigh; bleeding bright red blood over fracture on the front to the inner side of thigh; wound on end of ring finger of left hand. Patient conscious—in state of shock. (Working time eight minutes).

6. Engine flywheel explodes, injuring employe as follows: Left arm torn off; right eyeball injured; several bones broken on right foot; thumb on right hand mashed; fracture of right arm. (Working time nine minutes).

7. Oiler falls from beam, sustaining the following injuries: Broken back, back is straight; severe cut on front of left wrist which is bleeding in spurts. Patient in state of shock but conscious. Treat, lift on splint and mark time and set patient up on splint. (Working time 10 minutes).

8. Bad order tongs slip on pipe and pipe-liner receives the following injuries: Simple fracture of both bones of right forearm four inches above the wrist; deep lacerated wound two inches long on inner side of right arm beginning five inches above point of elbow and extending upwards, bleeding in spurts; wound extending entirely across palm of right hand, about one inch from base of fingers, bleeding profusely; lacerated wound one inch long across point of chin, moderate bleeding; dislocated right knee, leg straight. (Working time nine minutes).

9. Man strikes match on casing head. Burns on entire body above waist-line, including head, neck, upper extremities, chest and back. He is conscious but in state of shock. (Working time eight minutes.)

10. Highside of air compressor blows up and attendant receives following injuries. Simple fracture of middle of left collarbone; left ear torn off, bleeding in spurts; left hip dislocated. Treat. (Working time seven minutes).)

11. Pumper working on engine without disconnecting ignition, engine fires and flywheel hurls man aside with the following injuries: Fracture of base of skull, lacerated wound on hip three inches long extending from point of hip downward, blood oozing; wound across front of knee two inches long, bleeding moderately; wound on inner side of heel under ankle one inch long, bleeding profusely. Patient conscious in state of shock. (Working time eight minutes).

12. Tooldresser caught in bull ropes, causing the following injuries: Left foot crushed, breaking several bones of which three middle ones protrude through the skin on the upper foot three inches from the end of the toes; lacerated wound on the scalp two inches long extending directly backwards from a point three inches above the left ear, hemorrhage severe; dislocation of right elbow, patient unconscious and in state of shock. (Working time nine minutes).

13. Workman in contact with electric wire; Demonstrate three methods of rescue before treatment and resuscitate patient after third rescue. Treat burns on front of chest and both arms. (Working time ten minutes.)

14. Workman starting gas engine and receives following injuries: Severe injury to left eyeball; broken knee-cap of right leg; dislocated right shoulder; little finger torn off left hand, bleeding profusely. (Working time eight minutes).

15. Tank cleaner suffocated by gas in tank—rescued and is breathing shallow—about four times per minute. Simple fracture of both bones of middle right leg; wound on front of left forearm four inches below point of elbow, bleeding in spurts. Patient in state of shock, unconscious. Give artificial respiration two minutes. (Working time ten minutes).

Rules

1. A team will be composed of six men. Any employee of the Petroleum Industry may be a member of a contesting team, provided he is not a physician or a trained nurse.

2. At the conclusion of each event, the captain must line up his team at the head of the patient, have them count off and then raise his right hand and announce his team number.

3. Teams must bring their own first aid material, including bandages, splints, blankets, etc., and shall not be allowed to leave patient in order to obtain materials to complete problems.

4. Splints shall not be padded prior to the beginning of any event requiring their use but teams should have on hand padding for their splints required in any problem.

5. No practicing shall be allowed on the field before beginning of contest.

6. First aid material as outlined in Bureau of Mines handbook, "Manual of First Aid Instructions," only shall be used, and is hereby authorized for sole reference and guidance in contest work.

7. Teams performing will wear overalls and jumper or similar form of dress. Patient will be dressed similarly to other team members.

8. All bandages will be applied over clothing, except in cases of foot injuries, the shoe must be removed during the problem. Preparation of bandages prior to beginning of problems will not be permitted, with the exception of cravat bandages which may be folded.

Judging

A. Each team as it performs a problem will be rated by one or more judges.

B. All problems will be worked in marked off spaces which shall contain only the judges and contesting teams.

C. Contest problems will be announced by number and a gong sounded. Two minutes will be given for reading and discussing problem and a second gong sounded to indicate time for beginning problem. A third gong will be sounded when the allotted time for working problem is up.

D. Teams will be allowed two minutes for removing bandages and leaving field with materials.

E. Judges will receive a score card with discount tables.

F. Score cards will be signed, turned over to the Chief Recorder, and score tabulated and such score will be kept absolutely confidential by recorders.

G. Ties will be decided by one or more additional problems if time permits, but where time is lacking, ties other than for first place may be decided by captains casting lots.

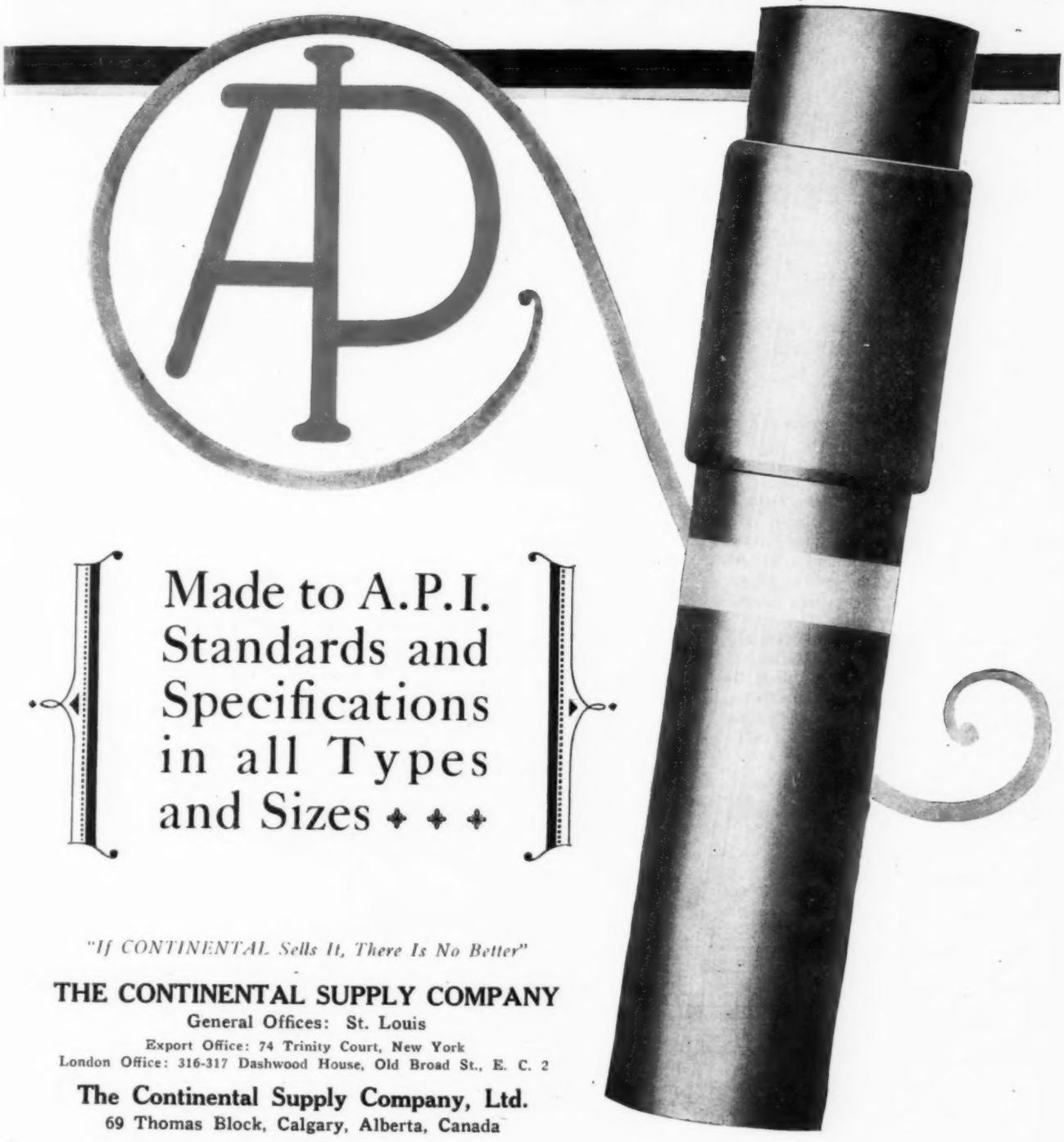
H. Judges will be required to examine the work done in each event and will be given definite questions to ask specified members of the teams about dessings or treatments.

I. Judges will score the team and inform the captain of any discounts, and team captains may question the judges as to discounts on each problem. In case of a controversy, the judge will call the chief judge immediately and his decision will be final.

Making Survey for Gas Line From La Barge Field

Kemmer, Wyo.—Survey is being made to determine the feasibility of laying a gas line from the LaBarge field to the oil field townsites of LaBarge and Tulsa, Wyoming, for a domestic and industrial supply. Gas would be taken from the Claremont Oil Company well on a hill between the producing wells of the California Petroleum Corporation and the Rainbow Oil Company's producing wells.

YOUNGSTOWN



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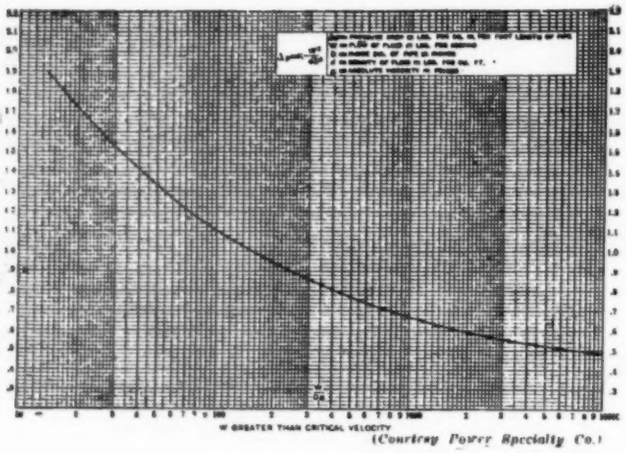


FIGURE 3— W GREATER THAN CRITICAL VELOCITY. (BELL).

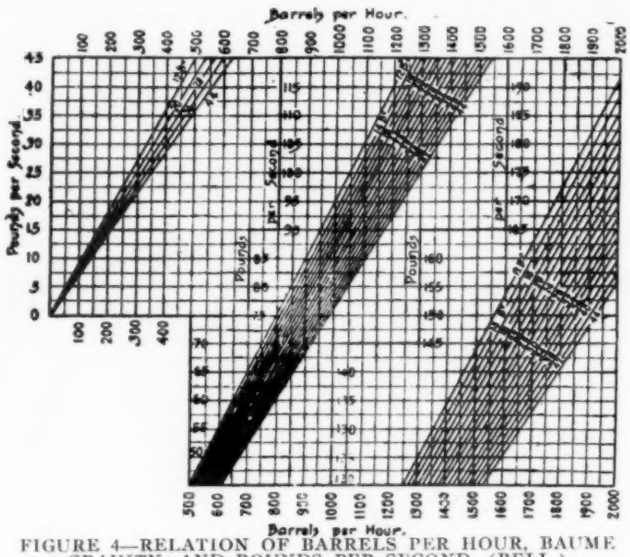


FIGURE 4—RELATION OF BARRELS PER HOUR, BAUME GRAVITY, AND POUNDS PER SECOND. (BELL.)

Pipe Line Construction and Operating Principles and Practices

(Continued from page 86)

additions to the station that may be desired later.

The next step in the construction of a pipe line system is to obtain the "right of way." Thelephone poles are an obstruction to farming and, consequently, it is not always possible to obtain the right of way for telegraph and telephone lines along the same course as the pipe line. In such cases, the telephone and telegraph line is diverted from the course of the pipe line, joining and, thereafter, paralleling it at some further point.

Having obtained the right-of-way, men are sent out to remove all obstacles and to grade points, where needed, along the route so that pipe screwing and ditching machines, and the entire construction work can proceed without delay as the various points are reached.

Distributing the Material

The steel companies from whom the pipe has been bought are instructed to ship the pipe to designated railroad points, nearest the course of the pipe line. Upon receipt of the pipe at these various railroad points, the pipe is unloaded and hauled by truck to specified positions along the line, from which positions the pipe is then strung along the course of the line. The hauling and the stringing of the pipe are usually done by contract; and, sometimes, a contract is given to one firm to build the line, which firm, in turn, sub-lets the hauling and stringing of the pipe, ditching, back-filling, etc.

Laying the Line

The lengths of pipe in a pipe line system are connected together either by welding or screwing. The use of the welded line is growing in favor with pipe line companies. In this case, the pipe is purchased in lengths of about 20 feet and then welded along the pipe line right-of-way into joints of 40 feet length. Immediately following the welders who do this first job are other welders who connect the pipe by further welding. Either the electrical or the oxygen-acetylene method may be used in making the weld, although the latter method seems to be preferred. When oxygen-acetylene welding is to be done, both acetylene generators and oxygen cylinders are strung along the route of that line that is being constructed.

When the pipe in the line being laid is to be screwed together, the pipe is strung with a coupling on one end and a thread protector on the other, the latter being removed as the pipe is screwed into the line. Before joining, each joint of pipe should be swabbed out to remove anything that might obstruct the line.

The line is laid either by hand or by machine, the more recent practice being to make use of a pipe-laying machine, except in places where it is impossible for the machine to operate. The line is screwed together as the machine progresses along the course, about 40 to 60 men being required in the crew in this type of construction, as compared with a crew of from 50 to 100 men in laying an 8 to 12-inch line by hand. Incidentally, it might be mentioned that at the end of each working day the end of the line should be closed with a "bull plug" to prevent rabbits or other wild animals from entering.

Ditching

Regardless of how the pipe has been joined together, whether by welding or by screwing, this operation is followed by the use of the ditching machine. The ditching machine digs a ditch wide enough and deep enough to care for the pipe, usually allowing from 18 inches to two feet for the line to lay below the surface

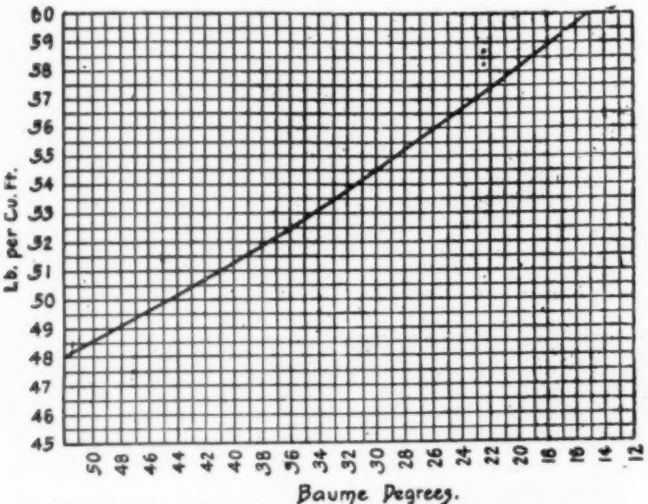


FIGURE 5—RELATION OF BAUME DEGREES TO POUNDS PER CUBIC FOOT. (BELL).

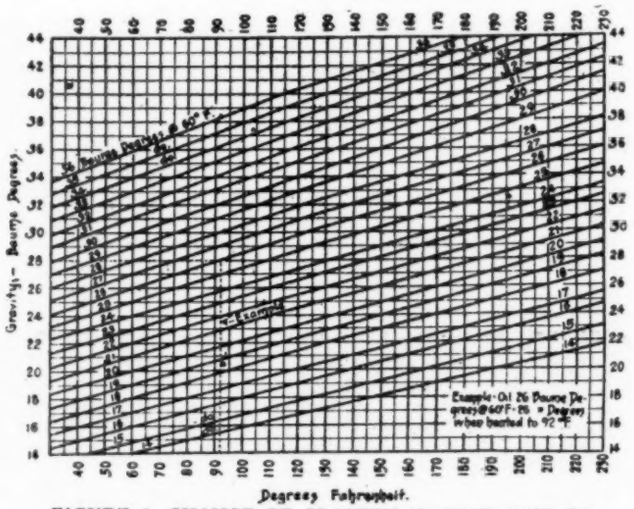
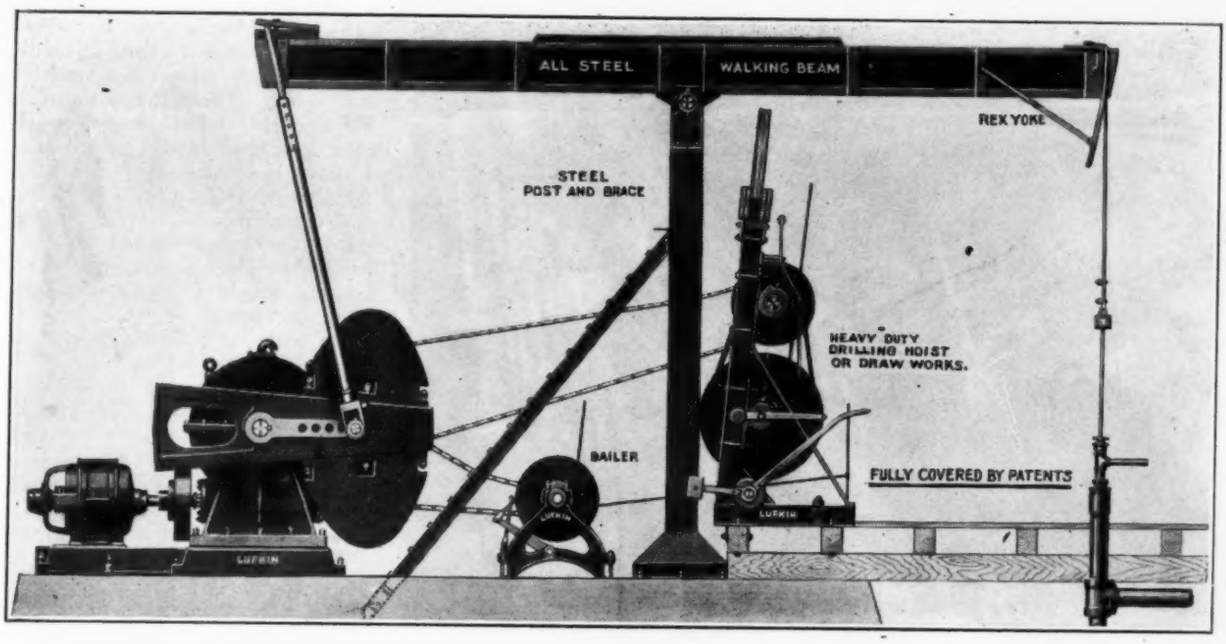
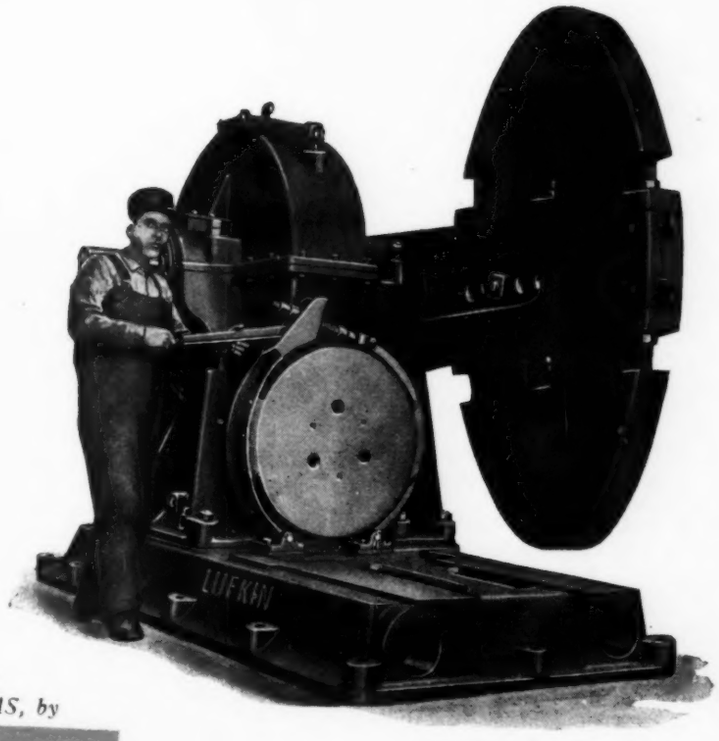


FIGURE 6—CHANGE OF GRAVITY (BAUME) DUE TO TEMPERATURE. (BELL).

of Lufkin Units at Exposition





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Mexico	12
Goose Creek	30
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Say you saw it in The OIL WEEKLY

—Photo Courtesy Crane Co.
OZARK PIPE LINE WHERE IT CROSSES THE VERDIGRIS RIVER

of the earth. The ditching machine travels along the ground like a tractor, but, in places where the machine can not go, ditching must be done by hand. Ordinarily, only a few men are required in this ditching work. Many unusual obstructions, such as canals, irrigation ditches, railroad crossings, rivers, towns, etc., are apt to be encountered in the construction of a pipe line system, but a discussion of such obstructions and how to pass the line through or around them satisfactorily and economically is not considered as being within the scope of the present article.

Protection of Line Against Corrosion

The question as to the *best* method of protecting lines from corrosion is one of the most important problems of pipe line companies.

There are four different methods of attacking the problem of underground corrosion, namely:

1. By insulating and grounding the pipe against electrolysis.
2. By modifying corrosive soil conditions.
3. By manufacturing more corrosion-resistant pipe material.
4. By the use of protective coatings that keep the metal free from moisture and the deteriorating constituents of the soil.

Five main types of coatings are available for underground pipe lines, as follows:

1. Paint.
2. Bituminous, dipped or poured.
3. Fabric reinforced bituminous.
4. Portland cement.
5. Metallic.

Any protective coating given the line is placed thereon before the pipe is lowered into the ditch.

A frequent practice on the part of pipe line companies is to apply (cold) a primer coat of asphalt paint, followed by a layer of hot asphalt, and then to wrap and seal the whole with a layer of asbestos—felt tar paper. Over this paper covering another coating of hot asphalt is applied, so as to form an impervious, protective coating for the pipe.

The usual method of applying the hot asphalt is essentially as follows:

The hot asphalt is drawn from the kettles in buckets in which it is carried to the point on the line where the application is to start. The hot asphalt is then poured into a strip of the asbestos-felt paper, which is held in a trough-like shape under a length of the pipe by several men. When the hot asphalt has been poured into the paper, it is next distributed over the whole of the pipe surface, after which the paper is drawn tightly about the pipe to which it is bound and sealed by the hot asphalt. Thereafter, a top coating of hot asphalt is applied over the paper covering. To do this, the general practice is to have two men—one on each side of the pipe—handle a canvas spreading-band placed underneath the pipe, and while a third man applies the hot asphalt to the top of the pipe, making use of a special pouring can in so doing, the other two move the canvas spreading-band up and down until the pipe has been completely covered with the hot asphalt.

An objection to the use of protective coating as described above is that, when the line has been laid in mucky clays, during dry weather there is a great contraction, resulting in the clay and the readily-adhering asphalt being pulled away from the pipe surface. With the seal thus broken, moisture at once enters and corrosion begins.

The only absolutely effective way to prevent pipe line corrosion is to encase the line in a concrete mass. However, the use of concrete is not economical unless it is definitely known beforehand that the line will be a permanent one and will not have to be taken up for many years, since to take up the line the concrete encasement would have to be broken.

The subject of pipe corrosion, its causes and methods of prevention or lessening, is so specialized as to be beyond the scope of an article of this general nature; for that reason, the subject has been discussed herein only in a comparatively brief way.

Lowering the Line

After the line has been covered with a protective coating, it is ready to be lowered into the pipe-line ditch. Great care must be taken in lowering the line without straining any of the joints. Lowering is accomplished by first removing the skids from under part of the line, a pipe windlass then being used to allow the line to be lowered gradually. After a short length of pipe has been placed in the ditch, the windlass is moved ahead and an additional length of line is lowered. Thus, in short lengths, the whole line is lowered into the ditch. Provision is made for the contraction of the line by allowing sufficient slack at the time when the line is lowered into the ditch. Where the line traverses rather flat country, provision is made for contraction by allowing the line to swing out of a straight course at intervals along the route.

Testing the Line

As soon as the pipe-line has been lowered into the ditch, a crew of men follow with teams and equipment and fill the ditch until it is heaped-over with dirt. For a quick test of the completed line air pressure can be applied, a test with 50

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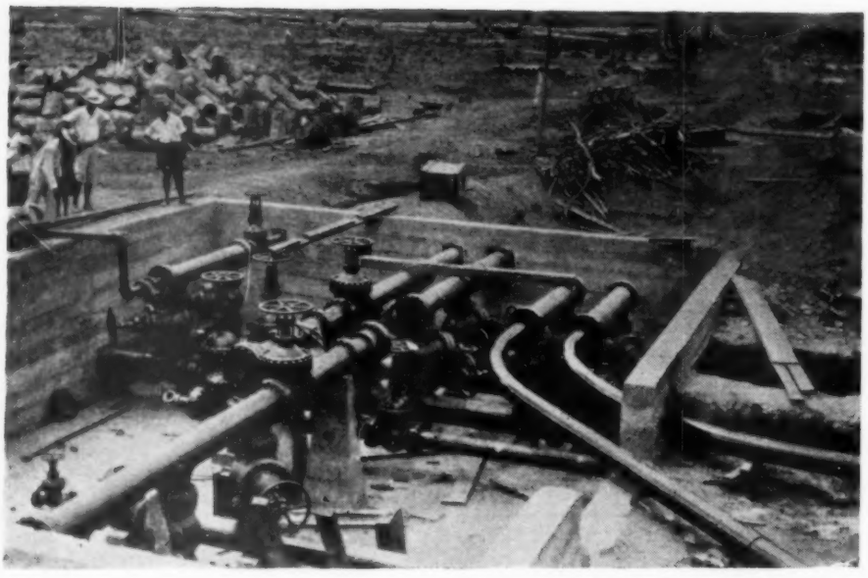

—Photo Courtesy Walworth Co.

TYPICAL PIPE LINE MANIFOLD

pounds of air pressure indicating quickly any collar leaks, split joints or any points where the line has separated. In all cases, however, a hydraulic test with water is made. This is done by filling the line with water by means of the main-line pumps, closing the line at the delivery end after the water has been received there, and then applying further pressure with the main pumps up to the amount specified in the contract under "conditions of test." It should be mentioned that a long line is tested in sections. Repairs in the line of any defects (indicated by the hydraulic test) are made before any oil is pumped through the pipe.

Building the Pumping Station

The type of power most suitable for use in a pumping station usually depends upon whether or not the line is a temporary gathering line in a flush production field or a permanent, trunk line installation that will be in service for many years.

Diesel engines direct-connected to duplex or triplex reciprocating engines, which pump the crude at from 600 to 800 pounds pressure to the next station, are very widely used as the source of power. Electric motors are also used, in many instances, in place of Diesel engines.

In constructing a pumping station, having established the center lines for the machinery, the foundations for the machinery are excavated first; thereafter, the forms for the foundations are set, reinforcing rods and machinery bolts are fixed and the concrete is poured, usually pouring also a footing or slab upon which the foundation rests. The pump and engine foundations are poured as one block, the pouring of the concrete generally being being a continuous process until the foundation has been completed. This is done so as to have the foundation free of any cleavage planes between the separate pourings of concrete. The foundation footing is reinforced with steel bars so as to bear the weight and the forces of the machinery without allowing any part of the equipment to settle unevenly. This is of the utmost importance, since any unequal settling of the foundation that may take place will cause misalignment of the machinery parts with resultant wear and damage. Building foundations are made as soon as the machinery foundations have been poured. Next, the erection of the steel frame-work on the building foundations is started.

Erection of the engine and pumps is commenced just as soon as the foundations for same are ready. The heavy parts of the machinery are received separately, it being the work of the machinists and pipe-fitters to assemble the parts, arrange the piping for the units, put the machinery in good condition and prepare it for operation. Upon assembly of the engines and pumps, they are given a trial test before being placed in operation.

While the machinists and pipe-fitters are erecting the pumps and the engines, other men are building steel storage tanks for oil, and concrete reservoirs for water; others, are laying suction and discharge lines to the tanks, building manifolds, erecting fuel and water tanks, arranging the piping around the station, etc. All the work is carried out on such a schedule that the completion of the job will not be delayed by the slowness of any part of the work.

Operation of Pumping Stations

Pumping stations, just like pipe-lines, are of two main classes: "gathering" pump stations and "main line" pump stations.

In designing either class of stations the main problem is that of determining the most economic form of power and the best fuel to be used in producing that power for the particular station under consideration. Gathering stations take the oil produced in the field and pump it into the main trunk-line system. Such stations are usually of a temporary nature, often have to be constructed in the shortest possible time and hence their design and operation offers a different problem than that of main line stations.

Some steam-driven pumping machinery is in use in pumping stations, but such equipment generally was installed before the Diesel engine was perfected as a source of power. In most instances, it is a case of giving consideration to Diesel or semi-Diesel engines or electric motors as power to drive reciprocating pumps, and to motor-driven centrifugal pumps, as to which is the most economical type of power to be used. However, frequent Californian and Mexican practice in pumping heavy, viscous oil is to use steam-driven pumping equipment, this being more economical due to the fact that exhaust steam is available for heating the oil to reduce its viscosity, thereby making it more fluid and less difficult to pump.

The operation of a pipe-line system lies mainly in the operation of the pumping stations. However, a few words concerning the telephone and telegraph system might be of interest. As in the case of railroads, communication over the whole of the pipe-line system is imperative. In fact, it is of such importance that it is a general rule to shut down pumping stations after communication has been lost for a certain length of time.

The pipe-line telephone and telegraph system connects the general office with every pumping station and delivery point on the system. In the offcie of the chief oil dispatcher, where the communication system centers, the oil is checked hourly over the whole system to determine whether or not any oil has been lost in transit and to see that the required deliveries are being made. From this office, also, the oil streams in the pipe-lines are so directed that the deliveries to the terminals are sufficient and so that a balanced condition will be maintained over the system as to daily runs from the field, deliveries and storage.

Every hour the chief oil dispatcher receives the pumping records from each station, thereupon checking the data carefully for any discrepancies. The telephone and telegraph systems are also used for general communication in the management of the system, a staff of operators being maintained at the general office for receiving and transmitting messages.

Other operating and maintenance men required for the "up-keep" of the communication system include a lineman in each division of the system whose duty it it to keep the telephone and telegraph circuits in good repair, to maintain communication, to remedy the grounding or short-circuiting of the line and to repair any break in the line; while a wire chief is kept at the general office to supervise the telegraph office, to check the circuits for trouble and to assist in maintaining communication. Additional wire chiefs are also located at other strategical points on the system.

For other and, in some instances, more detailed data on pipe-line construction and operating principles and practices, the interested reader is referred to the following books (partly complete list) in which information is given on the subject:

R. S. Danforth—*"Oil Flow Viscosity and Heat Transfer"* published (1923) by R. S. Danforth, 525 Market St., San Francisco, Calif.

R. S. Danforth—*"Oil Flow in Pipe*

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The increasing demand for an enclosed type, self-lubricating pump for large capacities and higher pressures has been the prime motive for our manufacturing a pump of the type we are showing at the International Petroleum Exposition, Booths 89-121, Texas Building. The new pump is called our Gaso Duplex Enclosed Type Power Pump (Center herringbone gear, interchangeable liners), Fig. 710.

This pump which is designed for pumping oil or water at pressures up to 1400 pounds per square inch, has many distinctive features:

1.—Every working part of the pump is enclosed, being oil tight and dust proof.

2.—It is entirely self lubricating, every working part running in an oil bath.

3.—Equipped with Open hearth steel continuous tooth herringbone gears, center driven, running in oil, assuring the highest efficiency and quietness of operation.

4.—Has inter-changeable liner fluid end in sizes from 2½" to 7" with 10" stroke. The liners and pistons can be replaced quickly and easily to meet any change in working conditions.

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5.—The pinion shaft bearings are Timken Taper Roller Bearings. The main bearings are lined with genuine babbitt and both are easily adjustable to wear.

6.—Pumps can be furnished with pulley for belt drive, with electric motor mounted on the frame and driven thru Silent-Chain or Fibre pinion and steel gear, or direct connected thru flexible coupling for engine drive.

7.—Allowance has been made for different gear ratios to suit driving conditions. Making this pump an ideal pump for any pumping conditions of a general nature.

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Another display of interest at the Gaso booths is one of our complete Portable Pumping Plants, for emergency installations, equipped with an Aladdin Duplex Generator. This device is driven by the fly-wheel of the motor and furnishes sufficient electric current to supply a string of seven or eight electric light bulbs. It makes possible the electric lighting of isolated pumping plants equipped with Gaso Portable Pumping units.

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OUSTRY PUMPS

Lines," Knight Publishing Company, San Francisco, California, (1921).

H. S. Bell—"*American Petroleum Refining*," D. Van Nostrand Company (1923).

Forrest M. Towl—"*Day's Handbook of the Petroleum Industry*," Vol. I, John Wiley and Sons, Inc., (1923).

E. R. Lilley—"*The Oil Industry*", D. Van Nostrand Company (1923).

E. H. Leslie—Chapter V on "*Fluid Flow and Heat Transfer*" of "*Motor Fuels: Their Production and Technology*" The Chemical Catalog Company, Inc., (1923).

Bacon & Hamor—"*American Petroleum Industry*", Vol I, McGraw-Hill Book Company (1916).

The books by Danforth are of particular value to pipe-line designing engineers including as they do charts showing:

1. The pressure loss in different sized pipe-lines.
2. The conversion of viscosimeter readings.
3. The horsepower required for pumping.
4. Crude and fuel oil viscosity temperature changes.
5. Temperature drop changes in pipelines.
6. Coefficients for commercial pipe.
7. Pressure loss in fittings; as well as formulas for testing oil heaters, coolers and heat interchangers.

Scientific and Technical Displays Have Broad Scope

(Continued from page 61)

various formations in the Mid-Continent territory, are also on display in the building.

A glass model demonstrating use of the air and gas lift has been put on display by the Bureau of Mines for the purpose of enlightening oil men on this system of producing. Corroded pipe caused by gas lift processes is also on display to be explained by expert engineers.

For the purpose of educational value to the public there are two model leases on display, one electrified and one operated by gas engine, the former being displayed by Union Machine Company and the latter by the Tidal Oil Company. Barnsdall Refining Company has on display a miniature model of a refinery, reduced to scale, for the purpose of educating those interested in the refining end.

Field men will have a chance to become acquainted in all phases of safety work through demonstrations put on by the safety division of the Mid-Continent Oil & Gas Association and by the Bureau of Mines, the latter having on the grounds its safety car, which is used to give safety demonstration work over the fields of the Mid-Continent territory.

A relief map of the Seminole area is one of the interesting points of educational value to visitors to the educational building, showing the lay of this area now responsible for the weakened crude situation.

Instruments for testing the viscosity of oil and for the measuring of gas will also be on display for educational value to those interested in this work.

A complete library with every available publication bearing on oil production and refining, engineering and technical books, and other literature relating to the advancement of the industry is located in the educational building, having been made possible through the co-operation of the American Association of Mining and Metallurgical Engineers and the Tulsa public library.

Educational features of historical importance are presented to the public in replicas of tools used in the early days of the industry, including an exact model of the Drake well, the old Murphy tools, the Moses bit and the Fox torpedo.

Logan County

Enid, Okla. — Roxana's McCully 1 discovery well in the Lovell area of Logan County, flowed 2450 barrels pipe line oil September 10. Corrected depth of this well is 5985 feet.

Water in Wilcox

Tulsa.—One of the most interesting wildcat failures in Oklahoma recently is that of Amerada's No. 1 two miles south of Maud, Seminole County, which developed 500 feet of water in the hole from Wilcox sand at 4693-4710 feet.

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Los Angeles, California Tulsa, Oklahoma. Kansas City, Mo.

Potrero Much Drilled With No Evidence of Production

After tests had proven futility of effort, fourteen rigs were busy on one hundred acre tract with no oil in evidence

By GEORGE R. ELLIOTT,
Petroleum Geologist

ASK me another: How many derricks make an oil field? Without turning to the back of the book, the answer is: One, if it represents a commercial oil well.

In March, 1927, there existed near the southwest edge of the city of Los Angeles a situation without parallel in the history of wildcatting: 14 new derricks erected on 100 acres from which not a single barrel of oil had been produced. Very few of us claim the faculty of seeing beneath the surface of the ground; the picture presented by such a group of graceful shining steel derricks, spaced as in a proven field, gave the most hard-boiled among us the feeling that we were gazing at an incipient Signal Hill or Dominguez—or at least a Rosecrans.

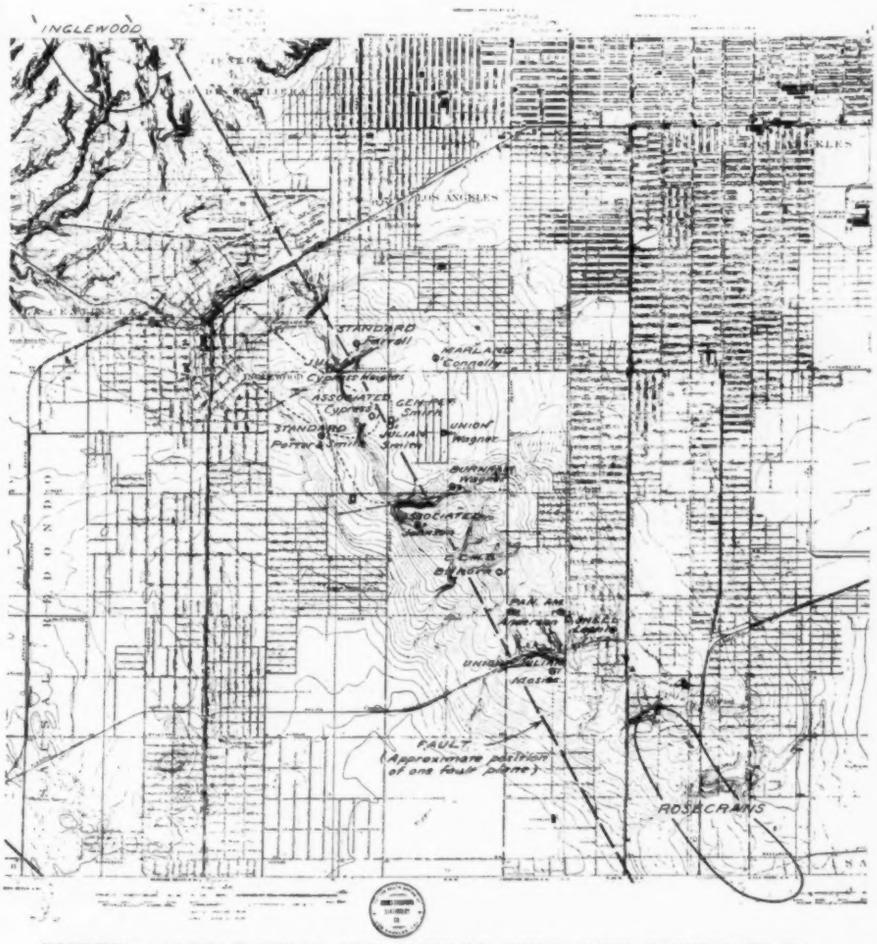
Why did these 14 derricks rear themselves so rapidly and why 30 days after the fourteenth was up did they start to come down as rapidly as they went up? The story is one which involves the mental attitude of California oil companies, and also illustrates an unusual outcome of town lot conditions similar to those which have influenced the development of so many fields in Southern California.

To appreciate the significance of Potrero, it is necessary to recall its position in the famous line of fields along the strip of land known as the Newport-Beverly Hills uplift or fault zone. The situation is best shown by indicating the intervals existing between the tops of the structures comprising the fields of this series—Beverly Hills, four miles; Inglewood, nine miles (includes Potrero); Rosecrans, four miles; Dominguez, six miles; Long Beach, five miles; Seal Beach, eight miles; Huntington Beach, five miles; Newport. This gives a total of 42 miles and an average interval of six miles.

Spacing of Fields

The interval from center to center of Inglewood and Rosecrans is nine miles, a greater distance than that existing between any other pair of fields in this series. Located exactly midway in this nine mile interval is the well about which this story mostly revolves—Associated Oil Company's Cypress 1. If this well represents the center of the so-far hypothetical Potrero field, the new intervals resulting harmonize very nicely with the spacing theory—Beverly Hills—four miles—Inglewood—four and one-half miles—Potrero—four and one-half miles—Rosecrans—four miles—Dominguez.

The spacing theory being so perfectly satisfied, why was not the Associated more actively joined by other companies in this play? Because of the apparently constricted possible limits for an oil field. Imagine a rope three-fourths of a mile in length swung in a circle with the Associated location forming the center; within the circle are four abandoned wells, and it would not require much of a stretch in the rope to include a fifth. All four wells within the three-fourths-mile circle were carried to depths greater than 5400 feet, were cored according to modern practice and recorded no showings of oil. Notwithstanding the existing limitations, the persistent feeling that here was a space which ought to contain an oil field influenced the Associated in its exploration program and drew at least the moral support of most of the other companies. At the time the Associated located its well, seven fields made up the Beverly Hills-Newport chain, but the existence of the eighth (Seal Beach) was already indicated by small oil production; a few weeks after the Potrero well was spudded the long 13-mile interval between the centers of the Long Beach and Huntington Beach fields was finally broken by a commercial well. It certainly looked as though Los Angeles Basin's wonderful chain of fields would be improved in artistic effect by



POTRERO WILDCAT WELLS AND POSSIBLE FIELD WITH REFERENCE TO TOPOGRAPHY AND ADJOINING FIELDS

See

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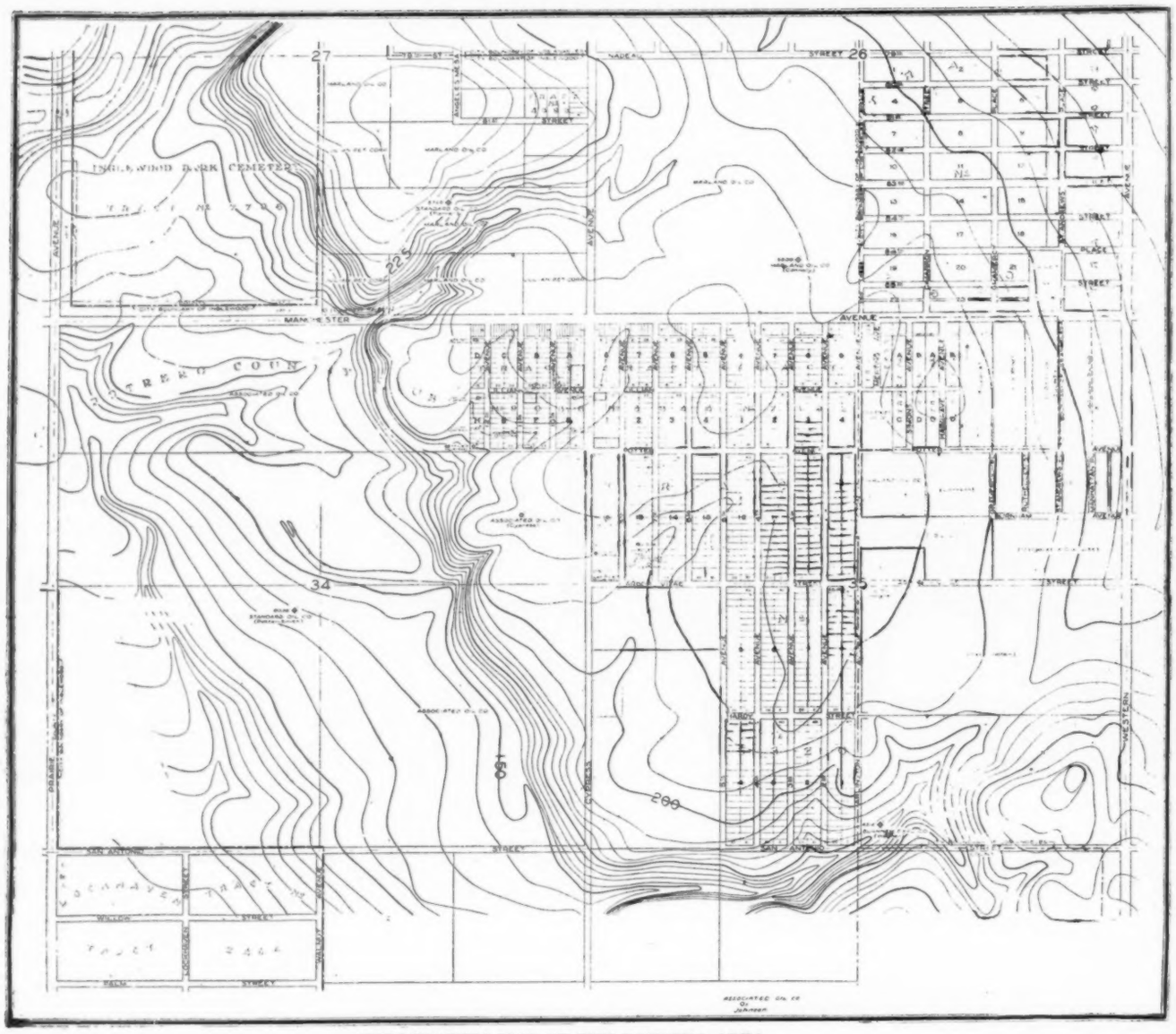


TOPOGRAPHIC MAP OF THE POTRERO AREA

replacing the nine-mile Inglewood-Rosecrans link with two four and one-half mile links.

Geological Features

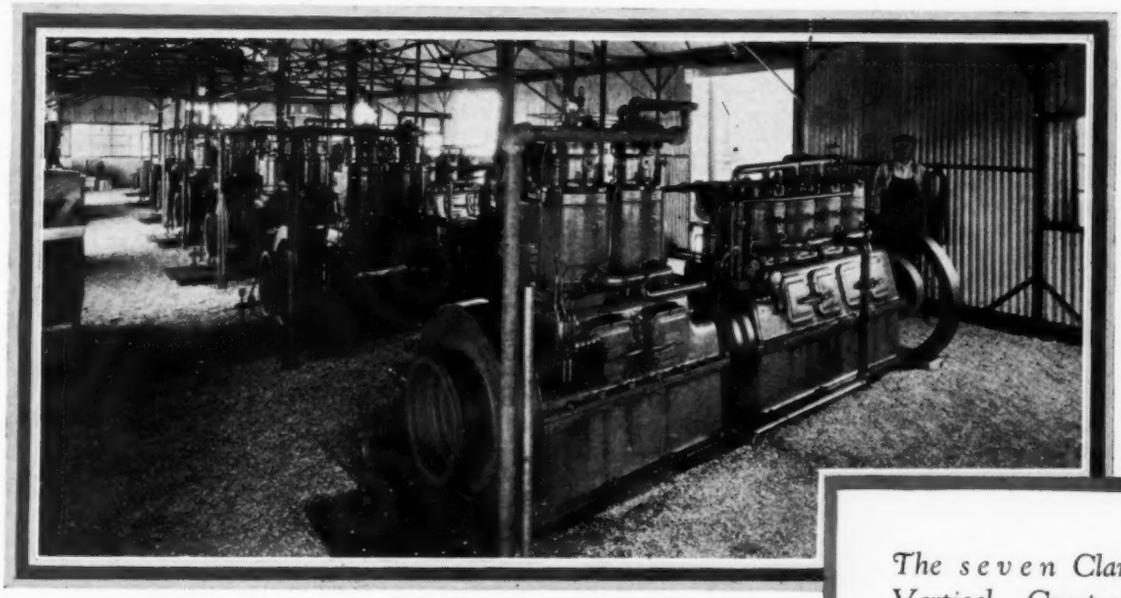
Lying between Inglewood and Rosecrans fields, the Potrero area might be expected to show a geological similarity to either; it could not have many features in common with both on account of the great dissimilarity between Inglewood and Rosecrans. Previous to the period of erosion which produced the present topography, the Baldwin Hills, which contain the Inglewood field, were elevated to a much greater height, perhaps 2000 feet higher, than the Rosecrans area. The oil accumulated at Inglewood principally on the southwest side of the fault zone, while at Rosecrans it is found on the opposite side. The position of the producing horizon at Inglewood is stratigraphically higher than at Rosecrans, occurring at the bottom of the Upper Pico in the first case and in the Lower Pico in the second case. · An even greater contrast exists in the gravities of the oil, that of Inglewood being 13 to 22 (undeveloped lower zone lighter), and Rosecrans 32 to 42.

From 1923 to 1927, 15 wildcat wells were drilled between the present Inglewood and Rosecrans fields; four were put down within a mile of the northwest limits of Rosecrans, but 11 may be considered as plays for the hypothetical Potrero field. The first of these wells was Union Oil Company's Wagner 1, drilled by the company which stands as one of the pioneers in California oil exploration and to whose aggressiveness is due the discovery of the fields occupying the 19 miles between Inglewood and Long Beach fields. The Wagner well was part of the Union's campaign to extend the line of fields northwest from Long Beach, which with Huntington Beach had wakened the world to the tremendous significance of this broken range of hills forming an almost straight line along the southwest side of the Los Angeles basin. The Union had three wildcat wells drilling about the same time: Callender 1 on top of Dominguez Hill; Rosecrans 1 and Wagner 1, both situated where the structural reflection is somewhat confused by erosion, but on high ground and carefully located with the aid of what geological evidence is obtainable from the soft Pleistocene formations which form the outcrops. Out of these three wells drilled in the same program, two became the discovery wells of new fields, Dominguez and Rosecrans. Such a high ratio of success in drilling wildcat wells has rarely been equalled; if the Union had discovered the Potrero field at the same time, the oil fraternity would certainly have taken it for granted that the Union had purchased the patent on a new doodle-bug which was infallible.

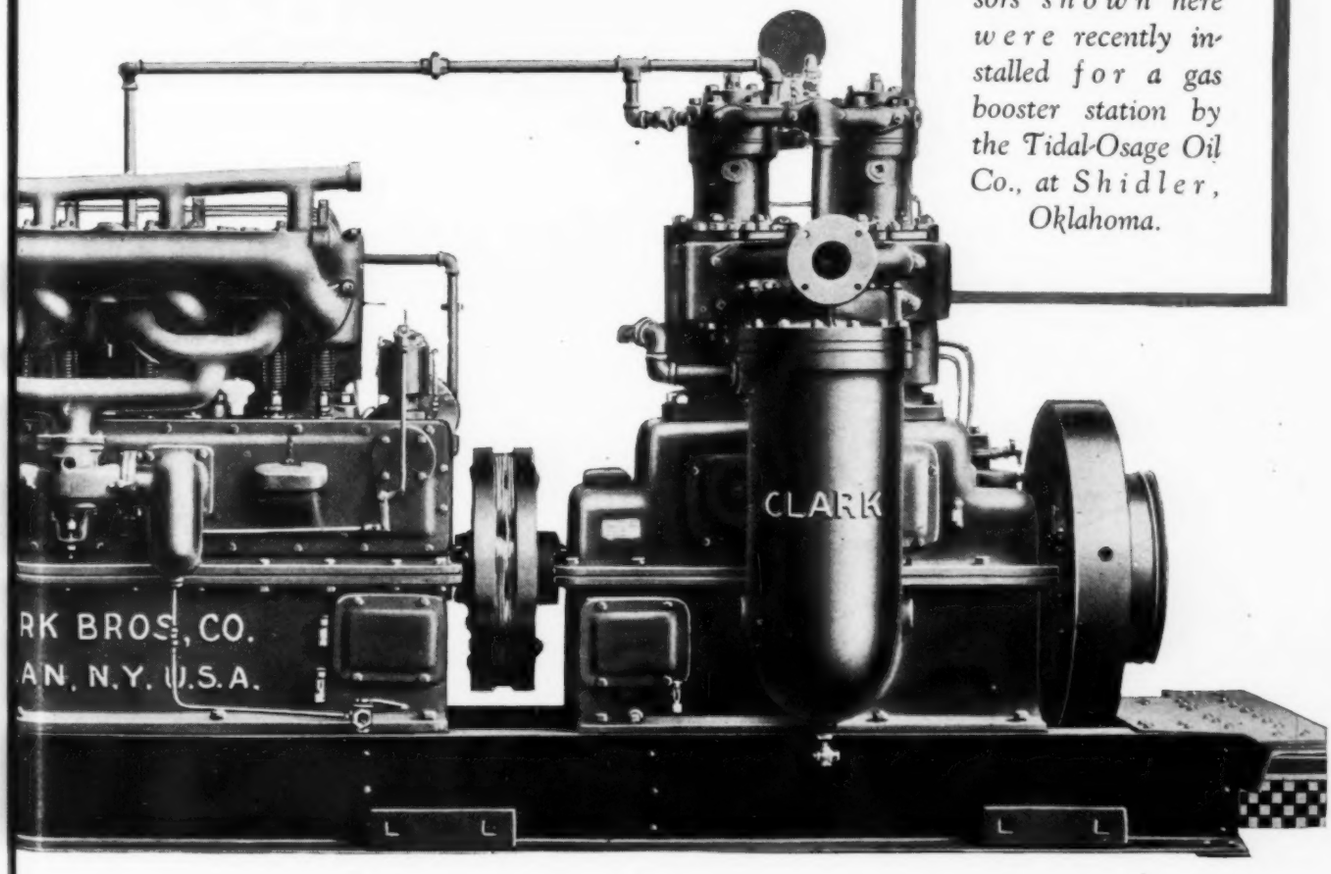
Standard Drilled Two

After Union Oil Company's Wagner 1 was abandoned in 1923 at 5514 feet, the Union's chief rival for wildcatting honors, the Standard Oil Company, made a heavy play with two wells, the Farrel and the Potter and Smith, located on opposite sides of the topographical feature recognized as a fault scarp. These two wells formed with the old Union well quite a symmetri-

TICAL COMPRESSORS
Installation



The seven Clark Vertical Compressors shown here were recently installed for a gas booster station by the Tidal-Osage Oil Co., at Shidler, Oklahoma.



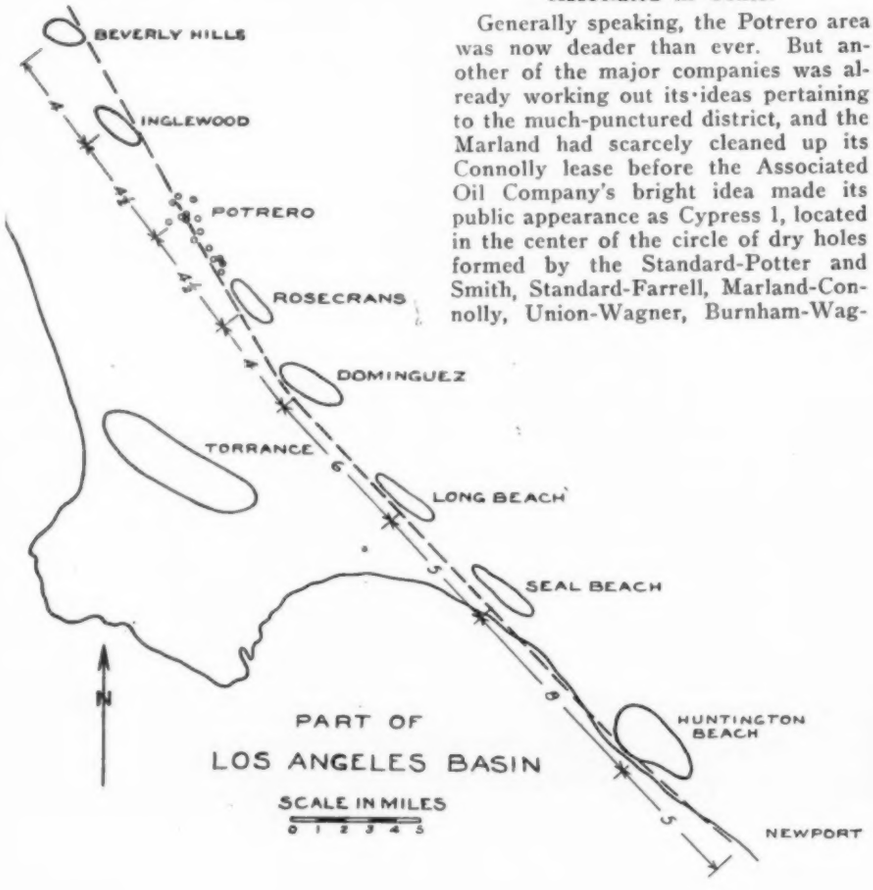
cal triangle, one mile to a side. During the drilling of the Farrel well a gas blowout occurred; this is the only demonstration of its kind ever staged in the Potrero area and to it has been attached considerable importance by many. To the Standard field men it was considered of no greater significance than the shallow gas blowouts which had occurred in wells four miles southwest at 1100 feet, accompanied by no showings of oil. Neither of the Standard wells cored any oil showing; the Farrell was abandoned at 5749 and the Potter and Smith at 6035.

The rapid development of the three great fields, Santa Fe Springs, Long Beach and Huntington Beach, with their production peaks all coinciding in the year 1923, held the attention of oil operators for some time, and it was not until 1925 that the Potrero area again proved a lure for wildcatters. This time it was the Burnham Exploration Company of the John Hays Hammond interests, who although new operators in California were ready to take a shot at an area which the two largest and most active companies had failed to solve. The Burnham well was drilled one half mile south of the Union Wagner well; while still 1200 feet shallower than the bottom of the Union well, microscopic correlation on the cores indicated that so far as structure and stratigraphy were concerned the Burnham well was no more favorably located; not even slight encouragement had been received in the way of showings and the Burnham well was abandoned at the comparatively shallow depth of 4314 feet.

Another newcomer in California elected to sit in at the Potrero game; this was the Marland Oil Company, now occupying a niche in the California hall of fame as the discoverer of Seal Beach. The Burnham having tested on half mile south of the Union Wagner, the Marland decided to go one half mile in the opposite direction; this located it three-fourths of a mile northeast of the fault scarp and nearly the same distance east of the Standard Farrell. Once more the oil companies' interest in the area revived somewhat, although becoming feebler after each abandoned dry hole. No well ever drilled in this area spudded in on a better looking location; one could near the Marland Connolly 1 and see the land surface sloping away in all directions; it certainly looked as though if topography indicated anything—and it usually indicates a great deal in California—this was a good bet. As the well reached a depth where frequent cores were taken, the choice of location was very emphatically confirmed by the work of the micro-paleontologists. However, the well passed beyond the horizon where production was to be expected and still deeper and deeper, coring gray sand and "nothin' but"; the scouts again lost interest. When the Marland finally abandoned the well at 5483 feet, most geologists felt that this test provided the most convincing negative evidence yet recorded.

Associated in Center

Generally speaking, the Potrero area was now deader than ever. But another of the major companies was already working out its ideas pertaining to the much-punctured district, and the Marland had scarcely cleaned up its Connolly lease before the Associated Oil Company's bright idea made its public appearance as Cypress 1, located in the center of the circle of dry holes formed by the Standard-Potter and Smith, Standard-Farrell, Marland-Connolly, Union-Wagner, Burnham-Wagner. A more accurate geometric description of this group of wells would be to say that they extend just slightly beyond the boundaries of a square mile with the Associated Cypress 1 occupying a central position within the square. The most striking feature of the Associated location was its proximity to the fault scarp, 600 feet to the southwest. The Associated play was taken seriously for two reasons: first, the fact that it was being drilled by a major company; second, five dry holes had been insufficient to entirely kill the persistent belief that a field existed approximately midway between Inglewood and Rosecrans. However, the lack of anything like excitement is shown by the fact that land adjoining the Associated leases on the north and east and only 800 feet from the well, remained unleased. It is true, this was not acreage but vacant 60-foot lots included within the city of Inglewood, but it inidcates at least that town lots are not considered attractive purely as protection acreage.



In September, 1926, the Associated with its usual rapid drilling had reached 4000 feet, cored some oil showings and cemented an 11-inch water string. The town-lot area began to stir and yawn and come to life and the Associated tied up the remaining large acreage which was considered to have a chance of being included within the limits of a field which Cypress 1 would possibly open up. The hole was deepened another 450 feet and in November a second water string was cemented. Eight months have now passed; this period has provided a large surplus of crude both for the Associated Oil Company and the United States in general; that is the official reason why Associated Oil Company's Cypress 1 stands untested with a plug of cement sealing off (——) (deleted by censor) feet of oil sand.

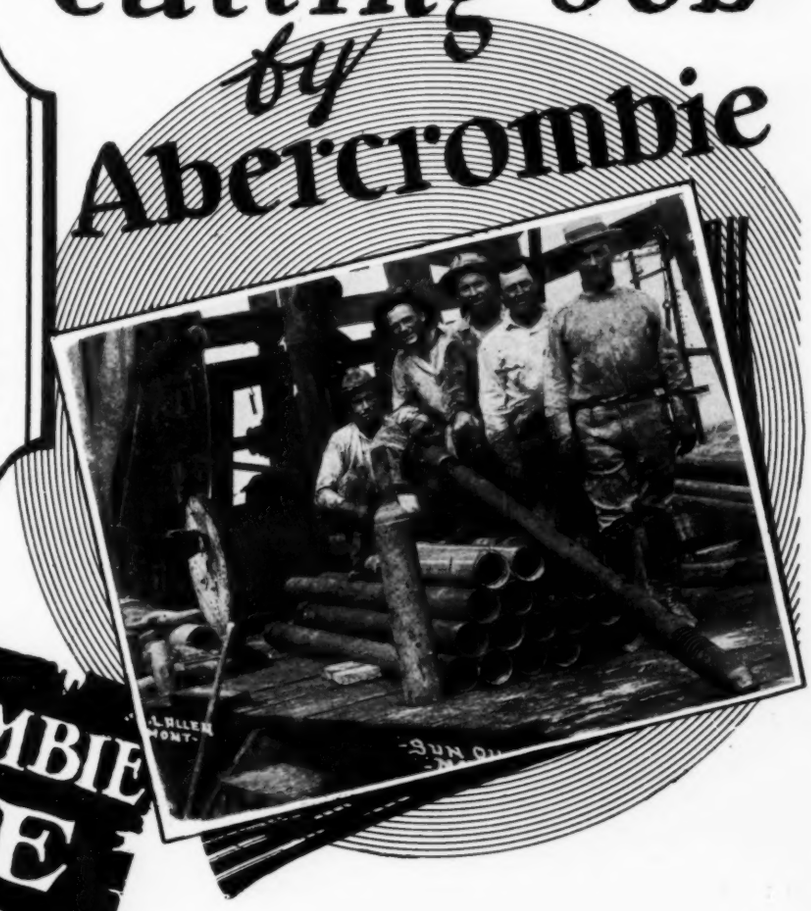
As the grass grew over the sump and rust accumulated on the drill pipe, the lone watchman at the Associated well saw news of the discovery, carried by "inside dope," partial information and pure rumor, take effect in the town lot area. This is where we come to the strange story of 14 derricks and no oil. No company large or small leased any 60-foot lots until the Associated actually cored oil sand. Julian Petroleum Corporation had already leased up 10 acres of the nearest acreage one half mile to the northwest and, when the Associated cored the oil sand now below the second water string, this same company started in to lease lots; the Julian was quickly followed by the General Petroleum Corporation, California Petroleum, George F. Getty and several smaller companies. It seemed reasonable to suppose that they would all wait until the Associated Cypress was tested, so it occasioned no little astonishment when one morning derrick material appeared on one of the Julian lots. A month after the Asso-

(Continued on page 240)

Another Cutting Job by Abercrombie

—from below 5100 feet

The drilling crew at the right on McLean No. 14 well of the Sun Oil Co., Spindletop, made 18 cuts in 4½-inch —15.50 pound Liner and wire wrapped Screen, each and every piece removed, leaving the hole absolutely clean below the 6⅝ inch Casing. This operation was done with no loss of time.



J.S. ABERCROMBIE INSIDE CUTTING TOOL

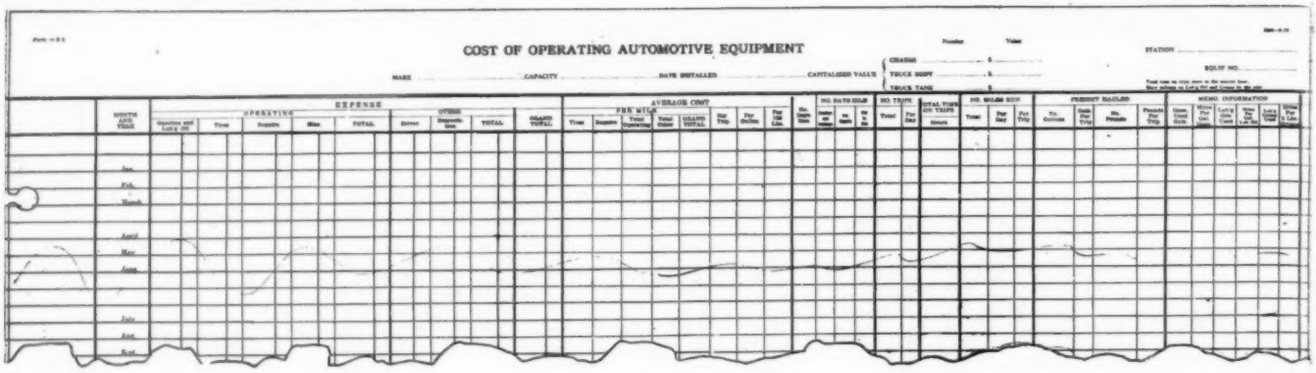
In This Well the Wire Wrapped Screen and Well Bottom Was Cut and Removed!

PERFORMANCE such as this leaves no room for doubt and PROVES the efficiency of the IMPROVED Abercrombie Inside Cutting Tool.

Ask the Men We Have Served—They Know!

J. S. ABERCROMBIE Co.
616-18 West Bldg. Houston, Texas

Say you saw it in The OIL WEEKLY


COST OF OPERATING AUTOMOTIVE EQUIPMENT

Inspection, Rebuilding and Accurate Records Reduce Truck Costs

A piece of automotive equipment continues to serve the Continental Oil Company as long as it can economically be restored to service

By WILLIS PARKER

G. R. GWYNNE, chief of the automotive department of the Continental Oil Company, headquarters in Denver, Colo., made public his mileage cost of truck operation for the reason that his method of figuring costs differs somewhat from that of many other truck operators, and, while he knows his figures, based on the average method of computing them, are low, still were he to announce them, many truck operators would consider them high and not be in sympathy with his methods.

The reason is obvious—all truck operators do not use identical methods in calculating costs.

Under Mr. Gwynne's system, not one cent of expense escapes its proper classification and when he announces that it costs so much to deliver a gallon of gasoline, there is no disputing it—the cost is there.

For example, how many firms using motor trucks to deliver merchandise charge the rental of the space occupied by the executive staff of the transportation medium to the trucks? How many charge the office equipment to the trucks? Or the garages and shops investment to the trucks? Mr. Gwynne believes that every distributing organization which maintains a fleet of trucks to transport the merchandise they produce and distribute, should charge the garages and shops to the truck operation costs instead of to property holdings; the space occupied by the executive staff of the transportation medium, the office furniture, telephone, lights, and heat should be charged to the trucks. In other words, an oil company should consider its truck fleet as an individual unit, just as a transfer company, and like a transfer company, include all property, furniture and fixtures, and telephones, in the cost of operating trucks.

The cost finding system used by Mr. Gwynne is so complicated that it is simple—a rather ambiguous statement. But it forms a chart by which the leaks in expense of motor transportation may be caught in time to prevent serious loss.

Standardized Equipment

Before endeavoring to understand the complicated simplicity of the system, we must pause to recollect that the Continental operates a motorized fleet of more than 800 units, over 15 States; that there are seven base shops located at strategic points; that the units are engaged in various kinds of work—some in the oil fields in connection with production, others in the refining and others in the sales department. The trucks work under varying weather and road conditions. Yet the accounting department is located in the general offices in Denver and from this point the work of the fleet is directed.

The first consideration is a standardization of equipment from an engineering standpoint. This includes standardization of chassis, body, accessories, tires, after which the maintenance and operation should be accomplished toward maintaining equipment up to that standard. Having decided the standard then each unit should be capitalized to full valuation, including spare rubber.

Operation expenses should be grouped to various charge numbers.

In the Continental system, the first item of expense is the cost of gasoline, oil and grease.

Item No. 2—Tires, literally renewals of all rubber to the original specifications, and repairs to all rubber on solid equipment—labor of removing wheels and re-installation.

Item No. 3—Repairs. All money spent in keeping equipment up to the original specifications or standard basis, with the exception of tires. Included in body repairs, cab repairs, replacement of parts and all labor.

Item No. 4—Miscellaneous. This is a debatable factor, according to Mr. Gwynne, but he distributes all depreciation, repairs, heat, light, power, etc., of the shops and garages to this column. Also he distributes to it all dead time supervision, depreciation and upkeep of tools, supplies, etc., at the base shops; the shop car, night washers, expense of traveling inspectors and other undistributable expense, such as dead time of the traveling inspectors—railroad fare and hotel bills. Then there is the expense of the supervision efforts, which includes the expense of those in charge of administration, the accounting department clerks, office equipment, phones, heat, light and power, also rental on a space basis of the general office of the transportation or automotive department.

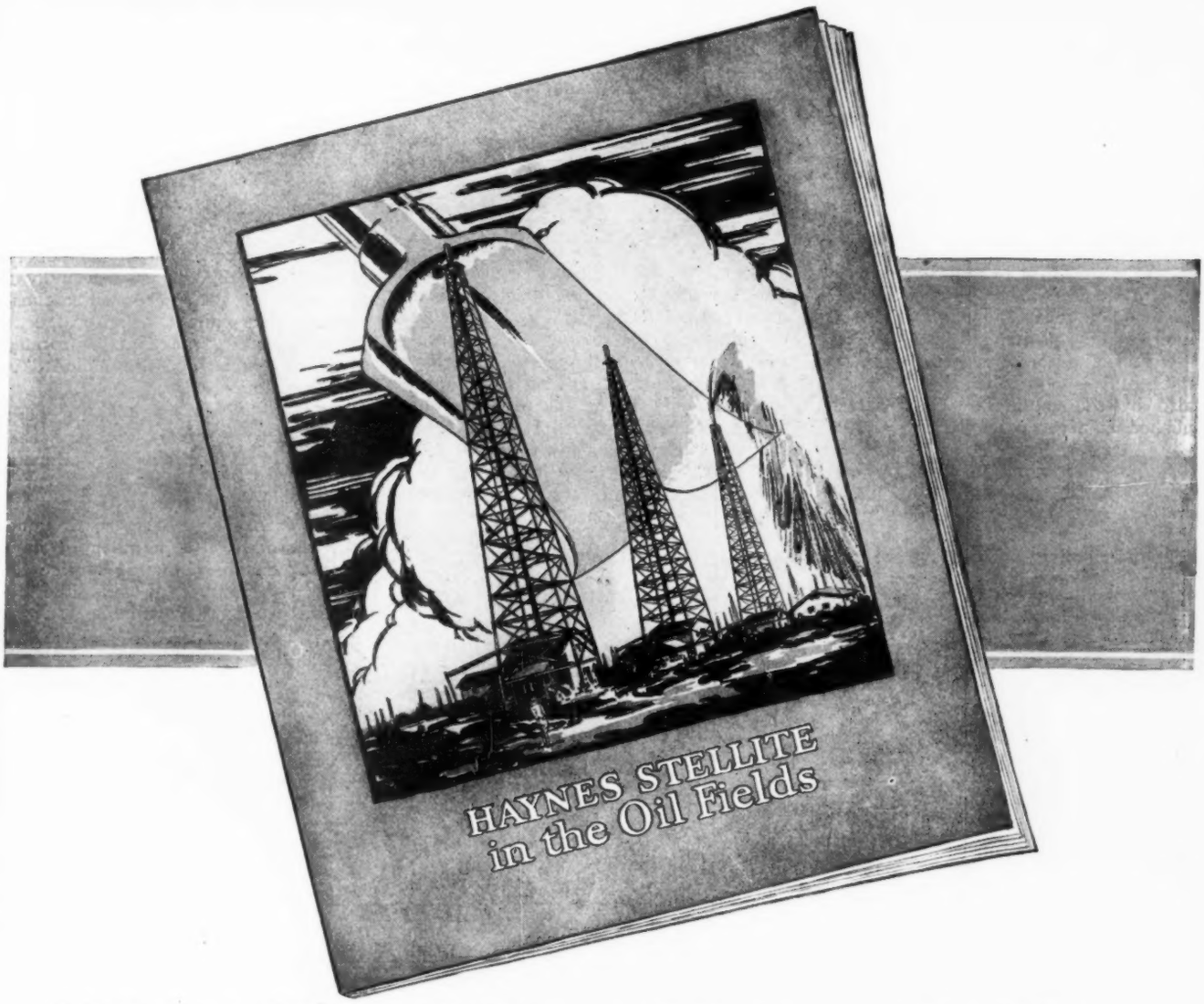
In other words, all expense that cannot be allocated direct to any one unit of the truck fleet is put in this column.

Item No. 5—The addition of the first four items gives the total operating expenses.

Item No. 6—Driver's wages on motor trucks. This has to be segregated because the salaries of the drivers of the sales cars are chargeable, not to the automotive department, but to the sales department.

Item No. 7—Depreciation of equipment and shops and their equipment.

Item No. 8—Is the total of No. 6



"Hard Facts" about Haynes Stellite

HAYNES STELLITE resists abrasion better than any other metal. This means dollars and cents to every oil well driller

For Haynes Stellite has been doing great things in the oil fields. Stellited bits will average twice as much hole in similar formations as steel bits.

How does Haynes Stellite reduce drilling costs? What have Stellited drilling tools done in practice? How do you Stellite oil well tools?

These are the questions answered in this booklet — answered in plain language by men who know oil well drilling.

HAYNES STELLITE COMPANY
Unit of Union Carbide and Carbon Corporation

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NEW YORK—30 East 42d Street
SAN FRANCISCO—114 Sansome St.
TULSA—Exchange Nat. Bank Bldg.

General Offices—Kokomo, Indiana

HAYNES STELLITE

Say you saw it in The OIL WEEKLY

and No. 7 and constitutes all other expense.

Item No. 9 is the total of Item No. 5, the total operation expense, and Item No. 8, the total of all other expense and this gives the grand total expense of operating the fleet.

Item No. 5 can be controlled through an engineering department, but Item No. 8 can only be controlled through the co-operation of the executives of the operation departments—that is, the general manager of production, the general manager of pipe lines; the chief engineer or general manager of the refineries and the general sales manager—with the automotive department as this total is controlled by them and also by the volume of work accomplished in a given length of time.

By Truck Months

Costs of tires, repairs and other operation expenses is analyzed on the basis of the costs per mile, but the cost of gasoline and oil is figured on the number of miles to the gallon, and the grease on the number of miles per five pounds of grease.

On the master sheet, which includes the above mentioned items of expense for the entire fleet, there is also the work accomplished by the fleet as a whole. This is figured upon a monthly basis rather than a yearly basis. To explain: it is called "truck months." That is on account of the frequency with which new trucks are placed in operation and the operation is counted by months instead of years; for in case a truck was put into service in January, it would work 12 months during that year; if it was placed in operation in July, it would work but six months.

The service record of the fleet shows the number of days in which trucks were out for repairs, Sundays and holidays, the number of days they were idle although available for use. This master sheet tells many tales, and the automotive engineer can deduce many conclusions from it. In fact through a careful study of this master sheet and a correction of errors in operation of the fleet, the automotive department has been able in one year to reduce the number of units 16.4 per cent, the number of days out for repairs was reduced 18.3 per cent, the number of days idle reduced 35.5 per cent, while the mileage was increased 11 per cent, the work accomplished was increased 13.2 per cent, and above all, the total operation expense was reduced 7 per cent.

The Control Sheet

Thus far we have taken a peep at the master sheet, which represents the entire fleet, but backing up this sheet is the control sheet for each truck. It is somewhat similar to the master sheet as far as the classification of the expense is concerned, there being the same divisions, which let me repeat again are:

Item 1.—Gas, oil and grease.

Item 2.—Tires.

Item 3.—Repairs.

Item 4.—Miscellaneous.

Item 5.—Total Operating expense, this being the totals of Items 1, 2, 3 and 4.

Item 6.—Salaries of drivers and helpers.

Item 7.—Depreciation.

Item 8.—Total of Items 6 and 7, making total other expense.

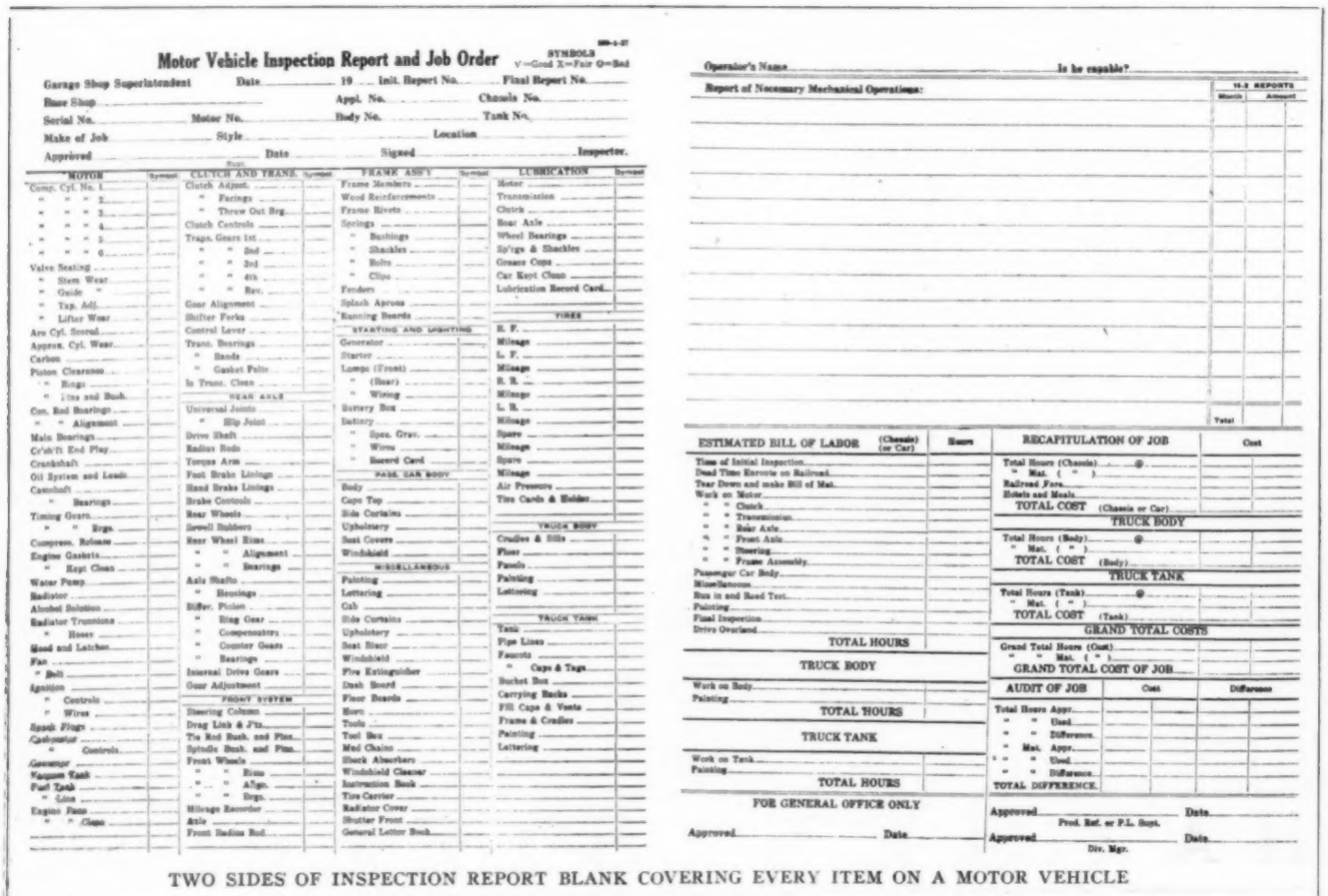
Item 9.—Grand total expense.

Every item of expense that can be definitely placed against the individual trucks is so placed while those expenses that cannot be allocated to the individual truck are prorated among all trucks and are included in miscellaneous expense.

Then on the other end of the page is a listing of work accomplished, number of miles traveled, gallonage delivered and in additional columns are the costs per mile, per gallon or other units of measuring the work done. Also, there are the number of days the truck has been out of service for repairs, the number of days idle because no work was available, etc.

These sheets are the life history of the truck for the totals are accumulative and the last total indicates the work done or the expense since the truck was placed in operation. To illustrate: One truck's history, as outlined on the control sheet, showed that its original cost was $2260. It had been in service 126 months. In that 126 months it had traveled 114,834

(Continued on page 232)



Motor Vehicle Inspection Report and Job Order

SYMBOLS V—Good X—Fair O—Bad

Garage Shop Superintendent ____ Date ____ 19__ Init. Report No. ____ Final Report No. ____

Base Shop ____ Appl. No. ____ Chassis No. ____

Serial No. ____ Motor No. ____ Body No. ____ Tank No. ____

Make of Job ____ Style ____ Location ____

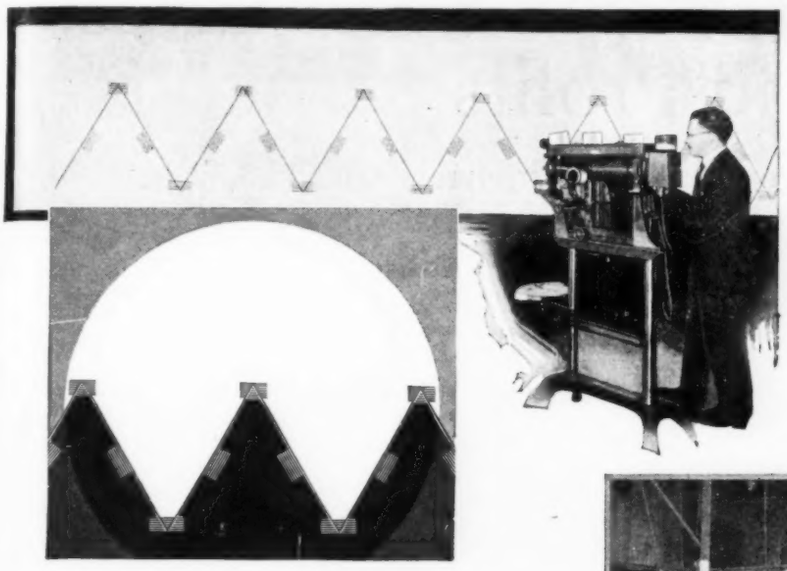
Approved ____ Date ____ Signed ____ Inspector.

MOTOR	Symbol	CLUTCH AND TRANS.	Symbol	FRAME ASS'Y	Symbol	LUBRICATION	Symbol
Comp. Cyl. No. 1		Clutch Adjust.		Frame Members		Motor	
" " " 2		" Facings		Wood Reinforcements		Transmission	
" " " 3		" Throw Out Brg.		Frame Rivets		Clutch	
" " " 4		Clutch Controls		Springs		Rear Axle	
" " " 5		Trans. Gears 1st		" Bushings		Wheel Bearings	
" " " 6		" " 2nd		" Shackles		Sp'rgs & Shackles	
Valve Seating		" " 3rd		" Bolts		Grease Cups	
" Stem Wear		" " 4th		" Clips		Car Kept Clean	
" Guide "		" " Rev.		Fenders		Lubrication Record Card	
" Tap. Adj.		Gear Alignment		Splash Aprons			
" Lifter Wear		Shifter Forks		Running Boards		TIRES	
Arc Cyl. Scored		Control Lever		STARTING AND LIGHTING		R. F.	
Approx. Cyl. Wear		Trans. Bearings		Generator		Mileage	
Carbon		" Bands		Starter		L. F.	
Piston Clearance		" Gasket Pats		Lamps (Front)		Mileage	
" Rings		In Trans. Clean		" (Rear)		R. R.	
" Pins and Bush.		REAR AXLE		" Wiring		Mileage	
Con. Rod Bearings		Universal Joints		Battery Box		L. R.	
" " Alignment		" Slip Joint		Battery		Mileage	
Main Bearings		Drive Shaft		" Spec. Grav.		Spare	
Cr'sh'ft End Play		Radius Rods		" Wires		Mileage	
Crankshaft		Torque Arm		" Record Card		Spare	
Oil System and Leads		Foot Brake Linings		PASS. CAR BODY		Mileage	
Camshaft		Hand Brake Linings		Body		Air Pressure	
" Bearings		Brake Controls		Cape Top		Tire Cards & Holder	
Timing Gears		Rear Wheels		Side Curtains			
" " Brgs.		Lovell Rubbers		Upholstery		TRUCK BODY	
Compress. Release		Rear Wheel Rims		Seat Covers		Cradles & Sills	
Engine Gaskets		" " Alignment		Windshield		Floor	
" Kept Clean		" " Bearings		MISCELLANEOUS		Panels	
Water Pump		Axle Shafts		Painting		Painting	
Radiator		" Housings		Lettering		Lettering	
Alcohol Solution		Differ. Pinion		Cab			
Radiator Trouble		" Ring Gear		Side Curtains		TRUCK TANK	
" Hoses		" Compensators		Upholstery		Tank	
Hood and Latches		" Counter Gears		Seat Riser		Pipe Lines	
Fan		" Bearings		Windshield		Faucets	
" Belt		Internal Drive Gears		Fire Extinguisher		" Caps & Tags	
Ignition		Gear Adjustment		Dash Board		Bucket Box	
" Controls		FRONT SYSTEM		Floor Boards		Carrying Racks	
" Wires		Steering Column		Horn		Fill Caps & Vents	
Spark Plugs		Drag Link & Fts.		Tools		Frame & Cradles	
Carburetor		Tie Rod Bush. and Pins		Tool Box		Painting	
" Controls		Spindle Bush. and Pins		Mud Chains		Lettering	
Governor		Front Wheels		Shock Absorbers			
Vacuum Tank		" " Rims		Windshield Cleaner			
Fuel Tank		" " Algn.		Instruction Book			
" Line		" " Brgs.		Tire Carrier			
Engine Pans		Mileage Recorder		Radiator Cover			
" " Clean		Axle		Shutter Front			
		Front Radius Rod		General Letter Bush			

Operator's Name ____ Is he capable?

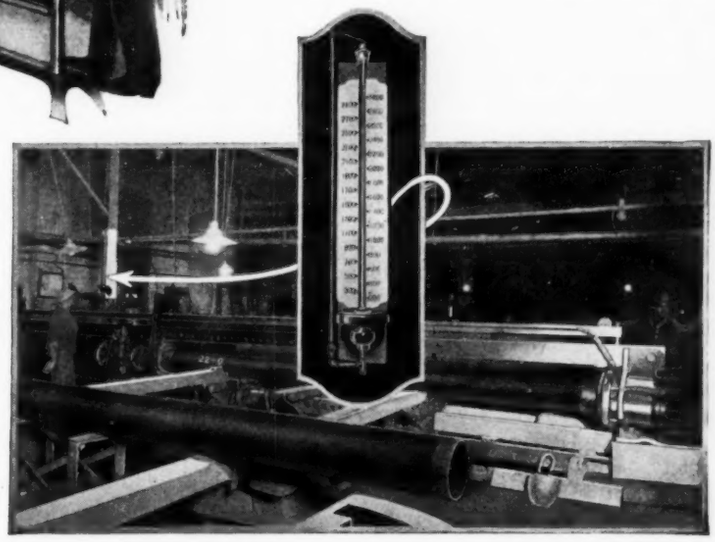
Report of Necessary Mechanical Operations:

	11-3 REPORTS Month	Amount



This powerful projector throws on the screen an image of Chester threading magnified 200 times. Frequent comparison of thread samples with the chart keeps the threading uniform and accurate.

Knowing the unreliability of spring pressure gauges, Chester has installed mercury columns on its hydraulic testers so that there is no "guess work" as to the amount of pressure on each tube. This is just one of the many precautions which Chester takes to insure the utmost dependability.



Chester's High Quality

sure of the uniformly good quality of every length, resulting from the extreme care used in the manufacture of Chester products.

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Also Makers of Wrought Iron Casing from 4½" to 12½"

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E. H. Bosches 2024 Houston Post-Dispatch Bldg., Houston, Texas

Distributors:

Prichard Supply Co. Mannington, W. Va. Mather and Waynesburg, Pa.

Petroleum Supply Co. Houston, Texas, Norphlet, Ark.

Kane Supply Co. Kane, Pa.

Wagner Supply Co. Fort Worth, Cross Plains, Breckenridge, Best, Amarillo, Borger, Brownwood, and Odessa, Texas

United Oil Well Supply Co. 712 A. G. Bartlett Bldg., Los Angeles, Calif.

Great Northern Tool & Supply Company, Kevin, Mont.—Kemmerer, Wyo.

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Hillman-Cooney, Inc. 1118 Santa Fe Ave., Los Angeles, Calif.

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CHESTER

STEEL CASING

SPECIALISTS IN CASING FOR DEEP WELL DRILLING

Accident Prevention Saves Lives And Profits

Development in safety work in field and refinery talked about in address before National Petroleum Association at Atlantic City

By H. N. BLAKESLEE,
Field Representative, Petroleum Division, National Safety Council

THE American Petroleum Institute in its desire to assist the petroleum industry and to maintain the ideals of its members has considered it proper to sponsor an organized effort to prevent accidents to petroleum workers. The National Safety Council, a non-profit association with a membership of over 4000 industrial concerns with service reaching over 8,000,000 employes, and with 14 years experience in helping the industry to solve its accident prevention problems, was selected to direct this organized safety campaign in co-operation with petroleum companies throughout our nation.

Already existing within the National Safety Council Industrial Division is a Petroleum Section. This section, which has been functioning for six years, is an organization of the accident prevention men of a number of leading companies in the petroleum industry. Committees have been organized representing petroleum companies of the Atlantic Coast, the Pacific Coast, and the Mid-Continent areas. With this organization already functioning, it is entirely logical that the American Petroleum Institute should sponsor a full time representative through the National Safety Council to promote still further the prevention of accidents to workers in the petroleum industry.

The National Petroleum Association has promoted an exceptionally splendid fire prevention organizatioin within its membership. Fire prevention work is primarily for the protection of property. Accident prevention work is for the conservation of human energy and the protection of human lives. Nevertheless, fire prevention and accident prevention have much in common, making it difficult, if not impossible, to establish a dividing line between the two. By removing fire hazards and by controlling fires in their incipiency you have not only saved valuable company property but you also have eliminated the exposure of workmen to hazards which might have caused injury or loss of life.

Furthermore, causes of fires and accidents are in a manner synonymous. Fires are caused either by an act of God, by mechanical or chemical action or by human carelessness or lack of foresight. Accidents come about through similar causes, an act of God, mechanical failure, or human failure. It is quite evident that work done along the line of fire prevention, with little additional effort can be extended to cover accident prevention. This is especially true in small organizations where the fire marshal or fire prevention engineer may add accident protection to his other duties. In the larger organizations where operations are spread out over a greater territory, it is frequently advisable to have both a fire prevention engineer and an accident prevention engineer.

Why Safety Work

Various employers have asked this question: "Why should I start safety work in my plant? I don't have many accidents and when I do have the insurance company pays the bill. So what would I gain by spending money and time in trying to prevent accidents?" Insurance companies admit they are in business to make money and whenever your accident experience becomes so bad that you are a loss to your insurance carrier the rate of your insurance premiums will be raised or the insurance carrier will drop you as a bad risk. You are actually paying your accident costs although you are insured.

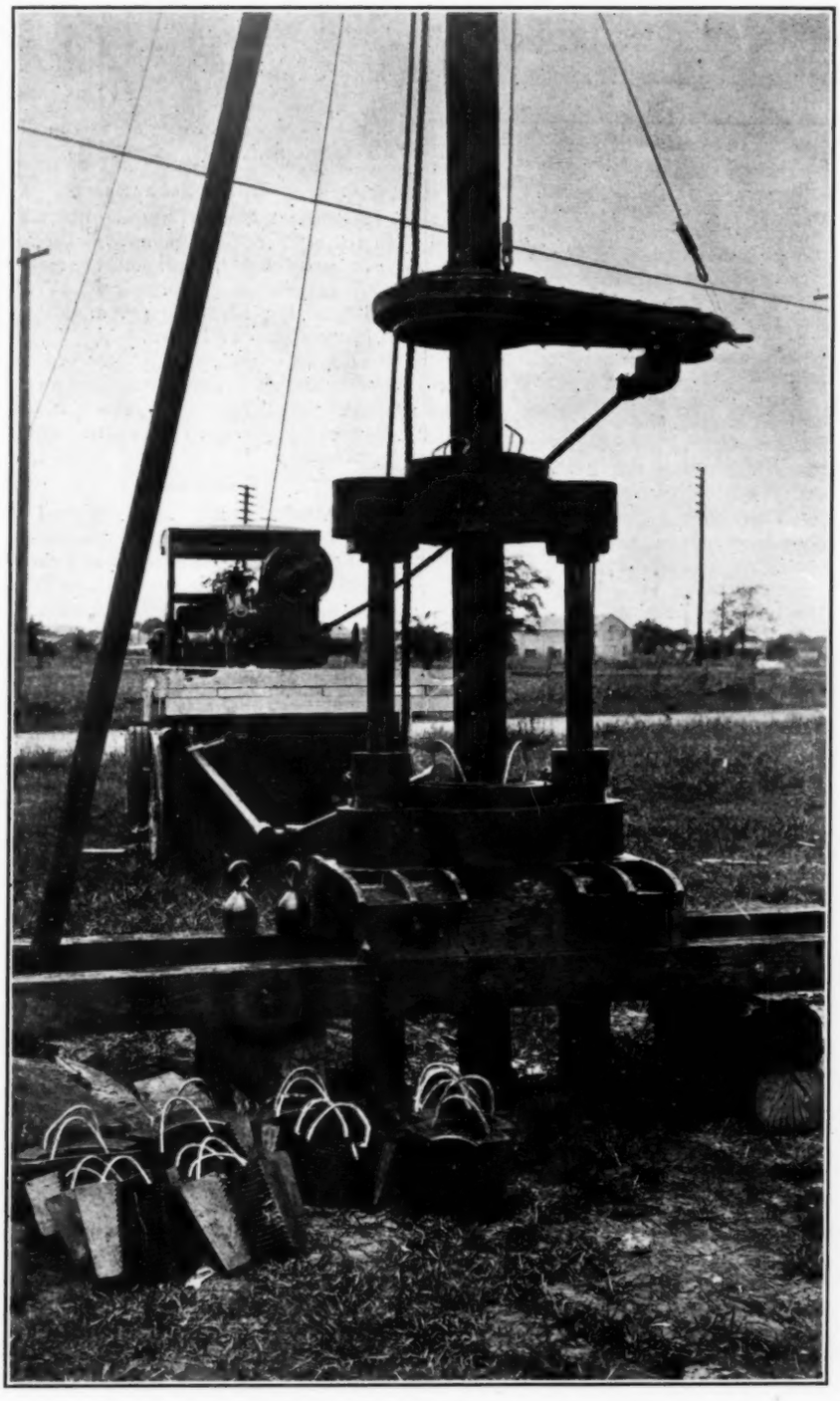
Accident prevention is a humanitarian necessity. We must not contribute to situations which cause the loss of time and suffering to our fellow men. In Pennsylvania a lost time accident pays nothing for 10 days, after which time the workman draws a maximum of $12 per week as long as the disability may last. It is depressing to all of us to know that an injured fellow workman is at home suffering and trying to maintain his family on $12 per week. We feel this situation most keenly when we realize that it was probably within our power to have prevented this accident.

Accident prevention is not only a humanitarian necessity, it is also a business investment—an investment that pays dividends. When an accident occurs something has gone wrong. If the accident has been to machinery, usually the machine stops and production stops. If an injury has been to a workman, usually the injured workman and all those working around him stop work and frequently the machine is stopped. Whenever workmen or machinery stop, production ceases, but production costs continue, and when production costs go on without production, dividends or earnings suffer. About two months ago one of our companies experienced the following accident: A hammer driver, while waiting on a heat, sought to amuse himself and others by throwing water through a window on a clerk in the office adjoining the shop. The clerk, in order to retaliate, rushed into the shop. The hammer driver, to protect himself and to carry the game further, ran to a hydrant, expecting to turn the hose on the clerk. The clerk grabbed what he supposed to be a bucket of water and threw it on the hammer driver. The bucket contained gasoline. The vapor was ignited from the burning forge and the hammer driver was turned into a human torch. The hammer driver died from his burns. The clerk who threw the gasoline and one other man were severly burned in putting out the fire. The costs of such an accident from the standpoint of claims covering hospital, medical bills and compensation, are large, but are not the only costs. Naturally every workman in the vicinity of this accident rushed to the scene. Lathes stopped. Forges were shut down. The whole office turned out. Other jobs stopped. Production was at a standstill with costs going on. After such an accident how long does it take crews to get back to normal production after they have actuallly once more resumed work? What is the condition of the nervous system of these workmen? Can they turn out the usual good products? It is impossible for us to actually figure the cost of lost time for such an accident.

The claims cost represent but one-fifth of the actual cost. This conclusion has been reached by Mr. Heinrich, of the Trevelers Insurance Company, in a recent study of 5000 accident cases. Some of the factors taken into consideration by Mr. Heinrich are cost of lost time of the injured employee, cost of time lost by other employees who stop work to assist the injured employee out of sympathy and out of curiosity, cost of time lost by foremen or supervisors in assisting the injured employee, investigating the cause of the accident, arranging for the injured employee's production to be continued by some other employee or replacing

(Continued on page 226)

THRIFT HYDRAULIC
CASING PULLING MACHINE
(PATENTED)



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THRIFT hydraulic machines are adapted to any size truck. The truck such as the WICHITA shown, permits entire equipment to be transported in one unit.

Requires no DERRICK, LINES, BOILER or other machinery. Can be EASILY and QUICKLY rigged up. Uses truck or other portable motor to operate.

The Thrift Corporation
HOUSTON, TEXAS

Economic Principles of Illumination In Office Buildings

Reduction of lighting costs plus increase in personal efficiency follows application of correct engineering technique

By ROBERT N. BURNETT

Research and Equipment Engineer, Humble Oil & Refining Company

Labor represents the greatest single item of expense in industry's cost account. It is, therefore, essential that everything possible be done to maintain, at a maximum, the personal efficiency of employes.

A high degree of personal efficiency is out of the question if the eyes of workers are constantly offended by tissue destroying rays which always accompany the light of an electric lamp, or if those eyes are forced to squint and strain in order to keep the work at hand within sharp focus.

This paper attempts to show that such uneconomic conditions not only may be entirely avoided, but that great savings in illumination costs may be effected at the same time. Design data are also given for use of the engineer and an actual example is cited.

A ROOM is said to be properly illuminated when the following conditions obtain:

1. Light relatively free of red and yellow rays.
2. Intensity adequate to the class of work to be done in the room.
3. Sufficient uniformity of distribution and intensity of light that the eye can discern no marked variation.
4. Absence of glare and also absence of sharply defined shadows anywhere in the room.

Glassware manufacturers often overstress the light diffusing characteristics of their products and so, foster the common and erroneous impression that good illumination is merely a matter of choosing good fixtures. Vital as is the consideration of light diffusion, there is an important difference between it and the *diffusion of illumination.*

Diffusion of light is simply a function of the materials of which the enclosing glassware is composed and the method of combining those materials. Light diffusion might be perfect for each fixture and yet fall far short of producing diffused illumination on a given surface.

Diffusion of illumination, on the other hand, not only requires diffused light at the source, but also depends upon the spacing, mounting height and number of lights, and upon the color and texture of walls, ceiling, floor and furniture. This is a condition of "scattered" light as opposed to a concentrated flood of light.

Now uniformity of illumination is a still different situation and consists in *evenness of* diffused illumination over a given working surface. Manifestly, the existence of this condition in a perfect state is beyond the realm of possibility and and it is, therefore, fortunate that it is as unnecessary as it is impossible. The human eye is incapable of discerning any variation under about 35 per cent, and so, the working minimum is conveniently fixed by nature, in that man may easily control the variation below so broad a range.

In the elementary discussion that follows, certain technical terms peculiar to illumination engineering must necessarily be employed and these are listed and defined below, to-wit:

Light—Radiant energy. A luminous flux precisely analogous to magnetic and electrostatic flux. The length of a light wave to which the eye reacts in vision is from 0.0004 mm to 0.0008 mm, and the velocity of light is approximately 186,000 miles per second.

Lumen—The unit of luminous flux. It is that amount of light emitted by a punctiform source of one candle power in a solid angle of one radian. Such angle is called a "steradian."

Foot Candle—One lumen of light on one square foot of surface.

Intensity—Lumens per square foot, or foot candles of light on a given surface.

Coefficient of Absorption—Fraction of flux directed toward a surface which is absorbed by that surface.

Coefficient of Reflection—Fraction of flux directed toward a surface which is reflected from that surface—the supplement of absorption.

Factors Influencing Illumination

These include the color scheme of the walls and ceiling of the room, the window area, the color of the floor covering and of the furniture, the height of the desks or working surfaces above the floor, the height of ceiling, the area of the room, the spacement of the fixtures, their height above the desks, the watt power of the lamps used, the material of which the reflectors, or enclosing glassware is composed, its contours and dimensions and its heat treatment in the process of its manufacture. All of these factors play important parts in the problem of effecting proper illumination and all must, therefore, be known, or evaluated by selection, in the process of solving any given illumination problem.

Color Schemes

Competent illuminating engineers agree that the best color combinations for rooms to be artificially illuminated are:

Ceiling—Light green.
Walls—Light buff or green.
Floor—Gray or brown.

The reflection coefficients of these colors are such that when they are employed for the surfaces above noted an harmonious blend of reflected light may be obtained.

Windows

If windows are not equipped with shades there will be very little useful reflection of light from them and this fact must be taken into account. Loss through absorption may exceed 95 per cent in the case of bare windows. If, however, the windows are fitted with shades or shutters and these be selected of a color to match the walls, a better condition of illumination can be obtained.

Fixtures

All the other influencing factors involve the lamp enclosing glassware and its location in the room, both with respect to spacing between fixtures and height above desks. Consider first the selection of the glassware: The function of any indirect or semi-indirect lighting glassware is to modify the light received from the lamp so that it may be emitted within the room in the form of filtered, diffused and uniformity distributed illumination. Thus it is sought to control the quality of lights as well as the quantity and distribution of it. Now quality of light embraces both color and diffusion, and both are important.

The modern Mazda "C" type lamp emits a polychromatic light which is destructive to eyesight because of its red and yellow ray components. Safe illumination, then, would require a glassware which filters out these harmful rays. The most effective filter yet devised is "Celestialite" glass which is made up of three separate layers of glass, one clear, one opalescent and one translucent blue, all fused together into a single plate. Some such glass should be required in whatever lighting fixtures are selected.

Diffusion of light depends upon the refractive characteristics of the opalescent particles contained in the glassware, that is, the ability of these particles to bend, deflect, and scatter rays of light. Dif-

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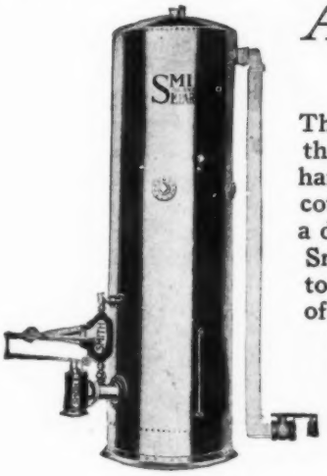

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Go into any field—there you will find Smith Oil and Gas Separators handling flush production—when the flush production is over a number of wells turned into one Separator—the other separators are moved on to new fields, continuing to give service

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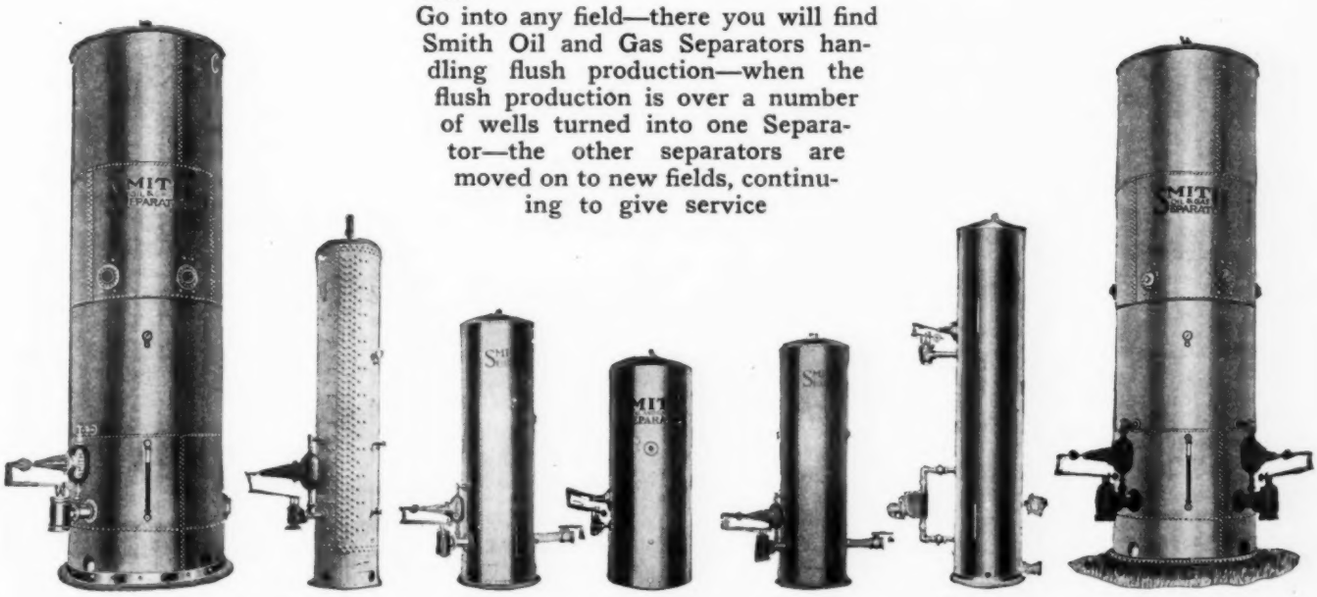

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Say you saw it in The OIL WEEKLY

fusive power is the ratio of this amount of scattering to the total incident light radiation, and it is the most important characteristic of glassware from the standpoint of illumination. This diffusive power may be increased by increasing the number of suspended particles in a volume of the matrix; by increasing the shape irregularity of the particles up to a certain point; by decreasing the size of the particles if its diameter is greater than one-half the length of a light valve; or by increasing the difference between the refractive indices of matrix and particle. This latter quantity is the ratio of the sine of the angle of incidence to the sine of the angle of refraction. The angle of incidence being that which the incident ray makes with the normal to the bounding surface while the ray is in the air, and the angle of refraction being that made by the refracted ray. Obviously, all these problems are concerned with manufacture, but they indicate to the user the great importance of careful selection of glassware by capable engineers who know what to require and how to determine by test that they get what has been demanded. They also demonstrate the folly of buying cheap glassware, for it is apparent that any product requiring so high a degree of precision in manufacture and treatment must necessarily be expensive.

Cheap glassware almost always consists of thin glass having sufficient capacity to present the delusion of internal bodily diffusion and possessing a highly roughened surface whereby the surface reflection is scattered or diffused. It is claimed by the makers of such glassware that the diffusion of surface reflection is sufficient that the light is effectively subdued, and that, being thin, the glass has a high factor of translucency and so requires a smaller size of lamp. Each of these contentions is fallacious and contrary to fact. In the first place, the scattering of surface reflection is in no wise equivalent to internal diffusion nor can it be nearly so complete. Even scattered surface reflection when obtained by roughing the surface can not be uniform because it is not possible to uniformly roughen any surface. Only by adequate body thickness and scientific proportioning and treatment of glass matrix, mullite and quartz can proper diffusion be attained. In the second place, light should not, and need not, be subdued by sheer stoppage as is the case when opaque pigment is used. It should be effected by deflecting and absorbing a proper proportion of light rays within the glassware body by irregularly shaped, properly placed and suitably sized suspended particles which themselves have a high degree of translucency. In the third place, translucency does not vary with the thickness of the glassware, but is an exponential function.

In general, it may be said that glassware should be shaped in an inverted deep bowl, be an effective filter against red and yellow light, have great internal diffusive power and be fairly smooth of surface.

Shadows

The more generally the light is distributed, the lighter are the shadows, and the more generally the light is diffused, the less sharp are the shadow outlines. In offices, all but very soft shadows should be avoided. Ralph concludes that for working surfaces such as desks, when the shadow has sharply defined outline, its density should not exceed 15 per cent while if the outline is indefinite, its density may be as high as 50 per cent—comparatively with direct or day light-cast shadow. Thus if non-refracting glassware is used, the intensity of illumination must be kept very low in order that the shadow effect shall be satisfactory. It may not always be possible to reconcile these conflicting interests and in general it is not possible. If however, the glassware is highly refractive it is possible to get any desired intensity and still keep the shadow effect within satisfactory and pleasing limits.

Location of Fixtures—Spacing

The location of fixtures, both in respect to distance between outlets and to height above the working plane, is independent of the size of lamp used from the standpoint of uniform illumination. Each type and shape of enclosing glassware has its own light distribution characteristic and this is the factor governing the location of the fixtures. Given a certain type bowl, the light distribution curve of which is known, the bowls may usually be so hung as to effect even illumination and then intensity of that illumination may be controlled by selecting the desired size of lamp. It is, however, a mistake to attempt to control intensity by altering either the correct mounting height of fixtures or the distance between outlets.

Spacing of fixtures should be such that the outer regions of fading light from adjacent sources will overlap sufficiently to effect as great a total intensity of illumination there as may exist directly under any source, or at any other point. This is, of course, because the flux density or intensity varies across the lighted area from center to outermost limit, according to the light curve of the fixture used.

In general, for the inverted dome or bowl-shaped glassware, the light distribution curve requires that the spacing between outlets should be about 0.85 to 0.9 times the ceiling height. Each fixture should be located in the center of a square having sides of such length then, providing the result is symmetrical placement and if not, as close an approximation as possible should be made.

Location of Fixtures—Mounting Height

The height above working surfaces at which the fixtures should be hung is a function of the light distribution characteristic of the glassware used and that in turn depends upon the contour of the bowl. For the conventional dome or bowl type, this height is about 0.6 times the correct distance between outlets. Such height allows sufficient over-lapping at the outer regions of light areas to effect approximately uniform intensity of illumination throughout the area between lights. That is, sufficiently uniform that the human eye can not readily detect the variation. This actual variation may, however, be as great as 35 per cent and still be indiscernable to the eye. Some slight deviation from this mounting height may be indicated in certain cases, depending upon the particular bowls used, the materials of which they are constructed, etc. For example, the Celestialite glassware is at present in use in the building and this glassware is somewhat dense due to its light filtering properties. Such a bowl probably should be mounted at a height slightly less than 0.6 and possibly as low as 0.55 times the distance between the outlets. In the building installation these lights are 0.97 times the spacing distance, or about 50 per cent higher than the correct mounting height.

Illumination Design—Examples

There are three principal methods of effecting satisfactory lighting conditions once the glassware has been selected—two by design and one by experiment. They all contemplate providing a suitable intensity of illumination on the working plane and so are all concerned with the selection of lamps of the minimum strength necessary to provide the desired foot-candle intensity. The matters of uniformity of distribution of light, diffusion, etc., are, as before stated, dependent upon the shape and characteristics of the glassware selected and upon the placing and height mounting of this glassware.

The total light flux required, then, to deliver the pre-determined net foot candles on the working plane may be determined by either one of two methods of calculation or it may be maneuvered experimentally by measurement at the working plane with photometric apparatus. This latter method should always be employed as a check on the others, since it gives positive information, whereas the calculation involves certain estimations which may or may not be closely approximate to the truth, depending upon the experience and skill of the estimator. Calculations are, however, very valuable as preliminary guides and so will enable a good tentative choice of lamp and thereby reduce the tedious labor of direct measurement. The final selection of a lamp should, however, be made from comparative measurement data wherever it is possible to obtain photometric apparatus for the purpose.

Methods of Calculation

These are known as the absorption method and the flux method of determining proper lamp power. The former proceeds upon the basis of light absorption by ceiling, walls, floor and furniture, and the latter upon considerations of net flux delivery desired upon the working plane as a percentage of the total flux emitted by the sources of light. Taking these in order and assuming that the room to be lighted is 20x20x12 feet: that the ceiling and walls are cream and light buff colored, respectively; that the floor is carpeted in gray; and that furniture occupies 60 square feet of the floor space. It is desired to have an illumination intensity of 10 foot-candles on the desks 30 inches above the floor. Celestialite bowls are used.

It is first necessary to establish correct

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locations for the fixtures and as before stated, the light distribution curve of the type of glassware here selected requires a spacing of about .85 times the ceiling height and a mounting height above desks 0.6 times the spacing distance. Then:

Spacing of outlets=12x0.85 (=10.2 ft.) =10 ft. approx. (for symmetry.)

Mounting height =10x0.6=6 ft. above desks=8.5 ft. above floor.

Absorption Method

Coefficient of absorption:

Light green ceiling	0.3
Light buff walls	0.6
Carpeted floor	0.3
Desks, etc.	0.8

Areas of absorption:

Ceiling 20x20	400 sq. ft.
Furniture	60 sq. ft.
Floor, less furniture	340 sq. ft.
Walls 4x20x12	960 sq. ft.

Foot-Candleage on Different Surfaces

This is known only for the desks for which 10 foot candles was selected, but since intensity varies inversely is the square of the distance from the source, it will be at the floor:

$$\frac{x = 10}{6^2 \quad 8.5^2} \quad x = 5t \text{ ft. candles at floor.}$$

The foot-candleage on ceiling and walls may be estimated from the distribution curve of the glassware used with sufficient accuracy for design—or it may be more accurately calculated therefrom. In this case the foot-candleages are approximately:

Ceiling	2 Average
Walls	3½ "

Tabulating these data for computation:

Surface	Area	Avg. ft. cdls.	Coeff. of Absorption	Lumens Absorb.
Ceiling	400	2	0.3	240
Walls	960	3½	0.6	2000
Furniture	60	10	0.8	480
Net Floor	340	5	0.9	1530
Apparent Total				4250
Add 20% absorption for bowl				850
Add 15% deterioration from dust				640
Total Lumens Required				5740

Selection of Lamps

Since the spacing of fixtures is 10 ft. on centers, four fixtures and four lamps are required.

Each of these lamps must provide one-fourth of the total lumens required, or $\frac{5740}{4} = 1435$ lumens

The type "C" Mazda lamp generates approximately 14½ lumens per Watt, therefore, the proper lamp is one of $\frac{1435}{14.5}$ Watts = 99 Watts. Lamp = 100 Watt, Type C Mazda.

Flux Method

Location of light fixtures having been determined from the distribution curves of the bowls as in the preceding example, and all other conditions being the same, the first step is to determine the percentage of the total flux generated that will fall upon the working plane. Sweet has worked out a very complete set of curves for this purpose, basing his calculations on the coefficients of reflections of walls and ceilings of various colors, and while it is possible to make specific calculations for any given case, it is sufficiently accurate to employ Sweet's curves for the range of conditions they cover.

The coefficients of reflection for walls and ceilings of cream and buff, respectively, are approximately:

Walls	0.4
Ceiling	0.7

Then, from Sweet's curves for these values, it is found that the percentage effective lumens delivered on the working plane is about 34 per cent, allowing for absorption by the glassware, etc. This method contemplates the minimum horizontal foot-candleage obtaining in the room, which is at he floor. In the preceding example it was shown that an illuminantion of 5 ft.-candles at the floor provides 10 ft.-candles at the working plane 30 inches above the floor. Then the total horizontal flux required is 5x400=200 lumens.

This being 34 per cent of the total, total flux = 5900 lumens.

Four lamps are used, whence proper lamp $= \frac{5900}{4x14.5} = 101\frac{1}{2}$ Watts or lamp = 100 Watt, Type C Mazda.

Both of the foregoing methods should be employed in any case of design, so as to afford a check on the work, and then if it is deemed necessary to reduce the final result to a fine point of accuracy, the actual illumination intensity and distribution may be measured photometrically and such minor changes be made as may be warranted as a result thereof.

Maintenance of Correct Illumination

However efficient the original installation may be, it will not remain so unless frequent attention is given it. The lamps should be tested at regular intervals and replaced whenever their efficiency falls below about 85 per cent of that of new lamps. The bowls should also be cleaned at regular and frequent intervals because their efficiencies are greatly reduced by the accumulation of dust. This reduction of efficiency may amount to 25 per cent in one month and as much as 60 per cent in a year where dust conditions are serious.

Photometric Apparatus

The foot-candle meter is a device which registers the intensity of light in lumens per square foot at any surface upon which the meter is placed. These are available in a variety of types and makes.

The Lummer - Brodhum comparison Prism Meter allows a visual comparison of illumination intensities from two or more different sources of light and so enables determination of the degree of uniformity of illumination prevailing throughout the room. It, too, is available in several modified forms and in several makes.

There are, of course, many other types of photometric apparatus, but these two are the ones most commonly used in illumination problems.

Conclusion

The Building Installation.

Survey of existing conditions reveals the following:

1. Spacement of fixtures is correct.
2. Mounting height is excessive by 50 per cent.
3. Maximum foot-candleage at present =7½.
4. 150 Watt lamps are used.
5. Glassware in use is the best obtainable.
6. Very poor illumination.

Examination of the light distribution curve of glassware now in use having disclosed the correct mounting height, it has been determined that if this glassware be hung at that height the following conditions will result:

1. 100 Watt lamp may be used.
2. Foot-candleage increased to 10 or 12.
3. Light bill reduced 33 1/3 per cent.
4. Excellent illumination.
5. Efficiency of personnel greatly increased.

Report Indications of Salt in Waller County

Houston.—Considerable prospecting with geophysical instruments has been under way recently, in Waller County, near Hempstead, with the result that a new salt dome is rumored as outlined.

A number of the major companies have had crews operating in this vicinity, but leases are held largely by two individuals. So far none of the big companies have blocked any acreage.

The area under consideration comprises approximately 25,000 acres known as the Menke Ranch, owned principally by C. A. Menke and his sons. The property is located about six miles southeast of Hempstead, four miles south of the Prairie View Normal School, four miles southwest of Waller, in about the center of Waller County.

J. R. Young et al of Houston owns about 1800 acres of land in the vicinity of the supposed dome and have leases on other acreage giving him control of approximately 4500 acres in the district. Williams and Cockburn, Houston, have leases on about 25,000 acres in the vicinity also. Holdings of these parties include all the territory in the recent survey made with the instruments.

Surface geology on the territory as reported several months ago by James P. Williams, shows a topographic depression, roughly oval in shape, covering 2000 acres about the center of the area, known locally as the "Salt Flats." Irregular sandy, white spots, barren of vegetation, locally called "salt licks" are scattered throughout the flats. Bunches of salt grass are common.

It is said that the ground at these salt licks is always salty enough for cattle, horses, and deer to lick.

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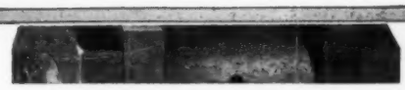


The Minstrel of Petrolia

By AESOP AVERY

IT might have been yesterday. But as a matter of fact it happened over 28 years ago. The point is the whole affair is plainly etched on my remembrance. It was early evening, a little past dusk. The place was Pleasantville, a little oil town on the top of a hill in Northwestern Pennsylvania. On that particular evening it had been my high privilege to be permitted to walk to town with my father—a distance of two miles from the lease where my father was acting as wet nurse to two score wells. Something had gone wrong on the lease and it had been necessary for father to go to town for the purpose of consulting the lease owner.

The first thing that greatly impressed me on our arrival in town was the fact that the barroom of the Eagle House was locked. This barroom, a very respectable establishment, a community club for all and sundry oil men, was usually crowded and men were coming and going all of the time. But on this night the doors leading to it were tightly closed. And it was in this barroom that my father knew he would find the lease owner.

From behind the closed doors we could hear a low-voiced speaker whose discourse was punctuated now and then by roars of very robust laughter. Ever and anon we could also hear the tinkle of bottles and glasses. It was as though, from behind the seavy oaken doors there was some privy and delicious secret.

My father made inquiry and presently he came back to where I was timidly perched on the seat of a heavy leather-covered chair in the lobby. He wore a cheerful grin.

"They've got Gid Morgan in there!" he announced.

Gid Morgan! A shiver of excitement raced up and down my spine. Gid Morgan, of all men! All my life I had been hearing of Gid Morgan, and there he was, separated from me by a stern and heavy door. Gid Morgan—why there was a score of legends about the man; he was a mysterious, aloof, remote creature that to most of us boys was a combination of Jack who climbed the bean stalk, Gulliver and Jesse James. What I mean, he was a hero! And here he was in person . . . just behind those closed doors.

I squirmed uneasily. I wondered if there might be a chance of catching a glimpse of him, an opportunity of just catching a vagrant echo of his voice. If there was, how I'd crow over Henry Woodcock on the morrow! The lobby of the hotel was crowded with thirsty and indignant citizens yearning for a chance to slip in behind those closed doors.

Just then the door into the lobby opened and fat Mr. Wilbur, the owner of the Eagle House, propelled into our midst one of that inner shrine. It appeared that the gentleman was suffering from a combination of coughing and alcoholic hiccups. Mr. Wilbur was puffing right heartily when he pushed the customer into a chair and delivered himself of a few well-chosen remarks and then started to waddle back into the bar. Hand on the knob he turned to glare in an ineffectual manner at the gentleman he had seated and who was voicing a maudlin protest at what he claimed was shabby treatment. His eye caught my father's.

"Come in!" he invited cordially.

We accepted the invitation in haste. The door slammed and was locked instanter. The long, narrow room was crowded with oil men and the air was hazy with smoke. Everyone was drinking and yet it was not a drunken crowd. It was, however, a congenial crowd and a strangely quiet crowd. With one exception they were all standing. Seated on the bar was a man, the center of attraction, calmly smoking a blackened corncob pipe and balancing on the palm of his right hand a small glass of amber-colored fluid. No need to tell me; that man was Gid Morgan!

At his side was a quart bottle of whiskey. He was a queer looking duck; his clothes were old, patched and fastidiously clean. He was of average height and his head was graced by a disreputable old felt hat. His moustache was a deep brown, very long and drooping and acted as a sort of an awning over a wide and humorous mouth. It was his eyes that caught you: black, sparkling and intent. And he had a beak of a nose.

He was saying calmly and in a wheedling sort of voice: "I'm on my way to Tidioute, gentlemen, and I ain't got me a cent to buy my sweetheart a posy with. It's a sad, sad circumstance and here I sit spinnin' tales to you wealthy and prosperous sinners. I'll have to bid you all goodnight and go out and see if I can't earn me an honest penny."

The crowd protested noisily. There was no mistaking the wheedling tone of his voice. Someone passed the hat. And I heard someone say, "Why, that's the second time the hat's been passed!"

The hat was placed on the bar and Morgan gave it only a casual glance. "Thanky!" he grinned.

"Give us another story," begged the audience. He beamed on them, his black eyes sparkling. With a flip of his hand he tossed down the drink and placed the empty glass where the bartender could refill it.

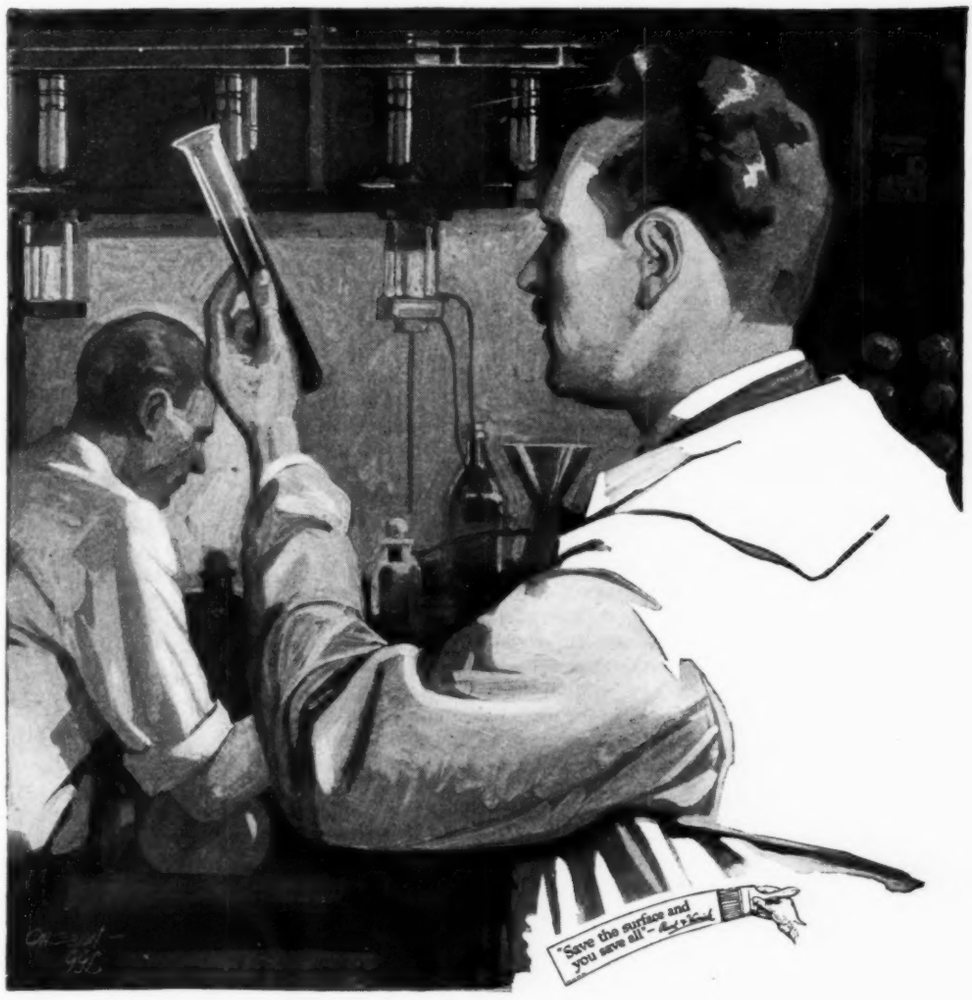
His eyes partly closed and he leaned back. Suddenly he grinned and his grin was infectious, friendly. I warmed to that smile. Then he began to talk.

"Mayhap," he started out, "you've never heard the story about the black cat that Tom Tookins owned and that drank up over a quart of nitro one day? Eh! Lived over by Shamburg, did Tom and he set a great store by this cat of his. . . ."

I've heard some convincing talkers since that time; it has been my luck to listen to some able orators and some better-than-average salesmanship of the oral type; but I have yet to hear a single voice that could talk as convincingly as Gid Morgan. Words dripped from him; at times he had you shivering in fear and then he'd twist the tale and have you rocking with laughter. He could bring tears to your eyes with a suddenness that almost shocked you—just a matter of inflection of tonal character, a flip of a bronzed hand, a subtle droop of that wide mouth.

I cannot remember all the tales he told that night. But I do remember what happened when the boarder at Tom Tookins carelessly kicked the nitro-filled cat. And I remember the story of the bumble bee named Oscar who mated with the humming bird called Minnie and what a havoc their brood of bee-birds wrought when swarms of them with stingers an inch long descended on the Free Methodist camp meeting at Enterprise. And then there was the tale of the whickles which was priceless. For the benefit of those not familiar with the whickle family I might state that Gid Morgan claimed they were a species of frog, only they had wings and flew backward. They lived almost entirely on mutton tallow and old waste. This was away back in the days when tallow was used to lubricte the steam engines. Every contractor present and every oil man, Gid stated, had probably noted how quickly a bale of waste or a quantity of tallow would disappear. He reminded the audience that each of them had probably very unjustly charged a friend or neighbor with stealing the waste or the tallow. Whereas the whickles had probably taken it! It was a good story and it wound up with the credible tale of one Ellis Wizenberg who secured a corner on all existing whickles and, for a consideration of sufficient size, would turn them loose in a well which they would promptly clean out all of the paraffine, thus beating any other known method of cleaning out wells and putting all good contractors into a position where they lost money.

"Some onery son-of-a-gun of a contractor sneaked up to the pen where Wizenberg had his whickles shackled



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ARCO

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Say you saw it in The OIL WEEKLY

up one dark night and let the whole danged mess of them out," Gid narrated. "They was mighty hungry for grease and they made straight for the nearest wells and raced down the tubing in droves. Well, sirs, when that happened, there was hell to pay. Ellis worked day and night trying to get them back, but he never was able to succeed and the blow shortened his life. And from that day on the production here in Pennsylvania started to go down! Yessir! What caused it? Them whickles! Millions of 'em down these holes eatin' away and breedin' faster than rabbits. That's what causes the production to go down, gentlemen!"

It was a highly entertaining theory. I've heard worse and less plausible theories since that time.

And he spun us the legend of Doc Haggerty, the shooter who took out a big life insurance in favor of his wife and who was supposed to have been blown to bits in a spectacular explosion, but who really lived and after his wife collected the insurance money rejoined her in West Virginia, where they both lived happily ever after. Morgan told the tale with additional quirks and phases.

He told us the story of Buck Stockton's big oil camp, where they mixed up the buckwheat cakes in fifty-barrel tanks and the cook hosed the batter onto fity-foot griddles and where the cakes were turned with shovels and where the griddle was greased by two specially trained nigger boys who skated hither and yon over the hot griddle with a side of sow belly tied on each foot. And all about Big Bill Wege, who worked for Stockton and who used a pitchfork for a table fork and who once ate three raw hoot owls on a wager. Big Bell Wege, who could drink a quart of whiskey without taking the bottle from his lips and whose strength was a legend: he could grip a quart bottle in his right hand and crush it like an eggshell; he could lift and carry a drilling stem.

Morgan told us about the hogs in the West Virginia hills. Very remarkable hogs they were, too.

"I boarded at a cracker's onct," he said. "They started to feed us side meat right from the start and when we kicked they said we could have the hams and shoulders when the side meat was gone. I boarded there 19 months and we was still eatin' side meat. I calculate them hawgs was 30 axe handles between tail and ears at that rate."

These were, as hinted, remarkable hogs. They roamed the high and very steep hills. As a result one hind leg and one front leg was very short, thus keeping the hog on an even balance. Every time a farmer craved pork he had to catch a hog. "You always had to chase 'em the other way," Gid explained. "Git 'em with their short legs on the down side and it was easy to catch 'em. These here hawgs had slits in their ears so's they could roughlock themselves down the hills. Yessir; it was a right amusin' sight to see them hawgs come slidin' down them hills, squealin' at every turn of the road."

And only the other day, in a nationally circulated magazine I read a story, a very readable story, based on Gid Morgan's West Virginia hogs.

Some of his stories, when he suddenly changed motiff, would make your blood run cold. There was, for example, the classic about the two Frenchmen who had just been discharged from the Union Army and who had located in the oil fields, and who quarreled over a dance hall girl. They were good soldiers and they believed in settling their differences as soldiers would; and the result was a saber duel atop a 60-foot derrick. Crouched atop that derrick their courage failed, their one-time drunken and Gallic valor vanished and they soberly bethought themselves of the fact that they had been friends, close friends. Obviously they couldn't fight. Yet below them were gathered a great audience who had heard the quarrel and the vainglorious challenge and the ready acceptance of it. They stood erect, pale, but soldierly, and saluted one another with their sabers. Then they kissed and hand-in-hand leaped to instant death below.

There were rollicking tales, too: the story of old Asa Lovel and his iron pick and shovel and the preacher from New York City, who boarded at the Lovel home. This Morgan did in rhyme; perhaps the meter wasn't all it should be; possibly the whole business limped more than a little. But it made us laugh with its swing and rhythm and cadance.

And he sang us a song that wasn't bad: I can't, to save my life, remember the song or the words, but I'm convinced that it was a folk song of sorts. Perhaps the only dyed-in-the-wool folk song the oil fields has ever known. It related the adventures of "Big Hole" Rooney, a wandering driller. I suspect that some of the verses were a bit salty but if they were I didn't notice it; I was too intent on the swaying figure atop the bar and the mellow voice that crooned the song.

It all came to an end entirely too soon. The affair stopped because Gid Morgan was tired and not a little drunk. Before the performance stopped the hat had been passed again and the donations were very liberal.

We were half-way home that night before my father spoke. My head was full of what I had heard and my father's voice rather startled me.

"Shucks!" he said. "I clean forgot to ask Sam whether he wanted that new well tubed with new or second-hand stuff."

Shades of Gid Morgan—speak up! Where are you? And why did you leave us without a minstrel?

He's gone now. Probably dead. But he used to appear at intervals. Just a shabby, but clean, man with a hook nose and burning eyes and an unquenchable thirst. He went from town to town, from barroom to barroom. Always welcomed. Always with a new stock of stories, a new song and new gossip. Today he's a legend. I've even heard the younger generation say he never existed. I've heard others openly scoff at the veracity of his stories. Ah, me! This younger generation of cynics give me a pain; they are forever taking the joy out of life. But I pity them. For they will never hear the like of Gid Morgan, the minstrel of the oil fields who wandered from one field to another, a gentle, harmless chap with a tongue of silver and voice of gold, giving sound entertainment for value received.

He was unique. "They busted the mould when they made Gid," an old timer told me once.

Peace to the ashes; rest to the soul of Gid Morgan, that mysterious and lovable old minstrel of Petrolia.

Garber Well Makes 865 Barrels Pipe Line Oil

Tulsa.—Marland Oil Company's Sarah Whipple 1, the Wilcox sand opener offsetting the company's Garber 1, three miles northeast of the old Garber field, Garfield County, was producing 865 barrels pipe line oil last week from 5305 feet with a total depth of 5313 feet, 47 gravity crude. Location is in the northeast corner of the northwest of 19-23-3w. Preparations are being made to continue deepening the hole.

Amerada Petroleum Corporation's Wilcox 1, located in section 19, is still fishing for lost bailer at 5083 feet, and is producing approximately 3,000,000 cubic feet of gas from 5030-45 feet. Skelly Oil Company's Wilcox in the same section is fishing for tools at 5205 feet.

Sinclair's North Walker 75, located in the northeast of 13-22-4w in the Garber pool, found 3,000,000 feet of gas in shallow sand at 825-45 feet.

Payne County Producer Flows 20 Barrels Hour

Tulsa.—T. P. Coal & Oil Company's Bett 1, southeast of the southeast of the southeast of 31-17-5, is averaging around 20 barrels an hour from the Wilcox at 4175-84 feet. This southern Payne County well, southwest of Cushing, came in the second week in September, flowing 45 barrels an hour with 6,000,000 feet of gas.

Tonkawa Well Drops

Tulsa.—Marland Oil Company and George Miller's Chambers 2, southeast of the southwest of the northeast of 9-25-2, Tonkawa field, Kay County, dropped during the second week in September from 3275 to 2520 barrels and late last week was showing 15 barrels of water.

SUPPLY, DEMAND AND PRICE

By ARTHUR KNAPP, Petroleum Engineer

ONE of the fundamentals of economics is known as "The Law of Supply and Demand." This is the law which expresses the relations of Supply, Demand and Price. It is often referred to as the "Law of Price."

The Law of Price is an expression of the relation of the desire to sell to the desire to buy. If we are to accept the law of supply and demand as the fundamental law, it will be necessary for us to reconcile our definition of Supply with "the desire to sell" and Demand with "the desire to buy." If we are to be satisfied with the word "law," rather than its plural, we must establish the fundamental law as one law rather than a series of distinct relations depending upon the status of supply, demand or price.

Before taking up the discussion of supply, demand and price, it will be necessary to define and discuss certain other terms which are necessary for a clear understanding of these fundamentals.

Money

Definition: A symbol of purchasing power, whether currency or bank or other universal credit.

It will be impossible to discuss money at any length in this article. It must suffice to call attention to the fact that price is measured in units of money and that units of money are not of fixed value. Whereas a foot or a pound is the same year after year, a dollar fluctuates in value with every price change. Even assuming that a dollar has a fixed relation to the economic worth of one commodity, the scale of prices of this commodity rise and fall with respect to the general value of the dollar.

The subject of the value of money is introduced here because, in the discussion of trade, the simple fact that certain transactions take place **for money** introduce this complication of the value of money.

Trade

Definition: Commercial exchange, including all of the transactions incidental to buying and selling.

There are five main classes of Trade:

A. Simple barter.

B. Producer to consumer transactions for money.

C. Producer - distributer - consumer transactions.

D. Raw products-distributer-manufacturer transactions.

E. Manufacturer-distributer-consumer transactions.

The most primitive form of trade is that of simple barter. A hunter in exchanging his deer meat for a farmer's cabbage, performs the simplest form of barter.

The producer-consumer transactions for money are also quite simple in most cases. When the hunter sells his deer meat to a consumer for money the transaction in itself is not commercially very complicated.

The producer-distributer-consumer transaction is more complex. The simplest case is that of the hunter exchanging his deer meat at a trading post for tobacco and cabbages. When several hunters and several farmers deal through the trading-post, the situation becomes more complex and when these transactions are done through the medium of money, the situation is still more involved.

These three types of trade retain approximately their same degree of complexity when the goods to be exchanged are manufactured. There is little difference when the hunter makes a fur cap and exchanges it with the farmer for food or homespun cloth. Even if the trade takes place through the medium of the trading-post and the hunters' caps are exchanged for the farmers' homespun cloth, no new elements are introduced which appreciably affect the conditions of trade. However, when money enters into the transaction and farm implements and powder or sheep shears and traps are included then we have the complications of modern trade.

Markets

Definition: A group of buyers and sellers who are segregated by factors which limit their buying and selling activities.

The simplest market would be the hunter and farmer who exchange meat for cabbages. When the trading-post enters into trade, we have two markets. All of the hunters and the trading-post form one market and all of the farmers and the trading-post form the other. In this case, the hunters and farmers are not a group of buyers and sellers. They do not meet in buying and selling activities.

Few commodities enter a simple market—that is, one in which the producer meets the consumer in buying and selling activities. Usually a commodity passes from the producer to the consumer through numerous markets, all of which leave their impression upon the price to the consumer.

A fisherman may sell his catch of shad to a cold-storage dispatch boat. (Market No. 1). The dispatch boat competes with others in the sale of these fish to the wholesale sea-food merchants. (Market No. 2). The wholesale merchant sells to the retail shops. (Market No. 3). The retail shops sell to the restaurants. (Market No. 4). The restaurants sell to the consumer. (Market No. 5).

Segregation of Buyers and Sellers Into Markets

The segregation of buyers and sellers into groups or markets is governed by limiting factors which apply separately to the buyers and separately to the sellers and by factors which apply collectively to both.

A market has three dimensions and may be likened to a solid. The length is represented by the buyers, the thickness by the sellers and the breadth by the area over which they are distributed. The true measure of all of the buyers is not their number but their total buying capacity and the true measure of the sellers is the total which they have to sell. The true measure of the geographical extent of a market is not expressed in square miles, but in terms of the factors which limit the area.

It is natural for each individual buyer to approach the problem of buying on the basis of his needs vs. all of the sellers. The converse is true of the sellers. For this reason, there is in general use, a limited term "market," depending upon whether the buyer or seller is interested. When a seller says "I am going to advertise in order to expand my market," he means that he wants to increase the number of buyers of his commodity. The market for his product includes all of the other sellers of that product and he certainly does not want to increase their number.

The use of the term "Market," in this connection is misleading, as it takes all of the buyers and all of the sellers, under a given set of buying and selling conditions to constitute a "market." This limited definition leads to misinterpretations in market analysis because the buyer or seller is apt to forget that all others who are buying or selling have an influence upon the market price, the supply or the demand.

It is impossible in this short article to discuss at length the various factors which limit markets. It is only possible to call brief attention to a few of them.

Among those factors which segregate buyers are:

Social position. The relation of the income of groups of individuals to the price of a commodity to be sold is very important. It is obvious that the sale

of a $5000 automobile or a $1000 piano is limited to buyers having a relatively large income, while those whose income will allow of the purchase of a cheaper car form another buying group.

Personal taste. The idiosyncrasies of buyers regarding the selection of commodities by color, by the influence of the purchase of others, by association of ideas which have no true relation to the value of the commodity are factors which segregate buyers.

The majority of Philadelphians prefer white shelled eggs while the Bostonians will pay a higher price for brown shelled. A large number of buyers insist on having green tea, although the color has nothing to do with the quality of the tea. Certain meat cuts are so much in demand in one locality as to raise the price above the average price asked for this particular cut, while another community, only a short distance away, may have a demand for an entirely different cut.

Race and nationality. The negroes, Italians or Swedes in a community make a distinct market for certain foods or clothing.

Religion. The relation of certain beliefs to the consumption of certain meats on certain days has a decided influence on the market of meat in a community which has a large population who are influenced by such beliefs.

Fashions. Fashions have a large influence upon buyers. The writer recently noted that the majority of school girls in a western town were wearing red shoes. This fashion created within this town a market which was quite distinct from the general shoe market.

Local customs. Communities which have been settled for a long time and where there is little migration and immigration are likely to sling to the use of certain commodities, although the national demand may have changed entirely.

Holidays, local celebrations, etc. Flag, popcorn or hot dog sales expand and contract enormously with local celebrations, country fairs and the like.

Industrial segregation. The collection of a large number of workers in one industry in one community will have an influence upon the sale of food, work clothes or tools which are particularly adapted to that industry.

Social segregation. College towns, sporting resorts and vacation resorts are very distinct markets for certain commodities.

Sellers are not segreated by as many factors as are buyers. The nature of commodities separates sellers into groups of manufacturers and producers (farmers, fishermen, lumbermen, miners, etc.), but these factors do not influence the grouping of such sellers into markets in every case.

The nature of the seller's commercial organizatioin, that is whether the seller is an individual or a well organized group or a corporatioin sometimes segregates sellers. A farmer or a fisherman or other who may sell from door to door may make a distinct market from the grocery store or meat market in some cases, but they do not always form part of a separate market.

Geographical Extent of Markets

The area in which the buyers and sellers of any market may be found is very largely influenced by factors affecting transportation.

Cost of transportation. This factor defines the limits of the market of coal, for instance.

Conditions of roads. This factor would have an influence upon the ability of the farmer to bring his product to the seller.

General transportation facilities. Highly developed interurban lines have an enormous influence upon the buyers in bringing him to large commercial centers and upon the seller when he has products which may be shipped, such as eggs, milk or berries.

Nature of commodities. Transportation indirectly determines the geographical extent of the markets of perishable goods. In the case of fruits, the limited distance which products may be shipped in good condition is one of the factors determining the limits of a fruit market.

Markets are very often visualized or defined on the basis of their geographical extent. Markets are not places or regions but all of the buyers and sellers engaged in buying and selling any given commodity within these places or regions.

Factors Affecting Markets in General

The weather affects the extent of markets, influencing the buyer and the seller. This factor mingles with that of transportation in the case of the shipment of perishables.

The season of the year has a great deal to do with the sale of many products. The market for gloves may cover the entire United States at one season of the year and almost disappear at another.

Quality is a very important factor in determining what buyers and what sellers will constitute a market of any commodity. In the case of many fruits and vegetables, quality very often makes two distinct markets. In one market are to be found those buyers who wish a quality which will be suitable for table use and the sellers will be those who have products of this quality. In another market will be found those buyers who are buying for cooking purposes such as canning or preserving and the sellers will be those who have this quality. Sellers having both qualities will be members of both markets but it is evident that they are separate markets.

Quality may be a limiting factor in another way. It usually happens that at the end of the watermelon season in New York there are many more melons shipped than can be sold or even given away. It has been found that of these melons the eight pound melon has the best chance of being sold. Quality, in this case, limits the market to those producers having eight pound melons.

Probably the most powerful single factor in the determination of the size of any market is price. The buyers and sellers engaged in trade determine price and price in turn either attracts other buyers and sellers or compels those who form part of the market to retire from buying or selling activities.

When eggs are 30 cents per dozen, it is probable that the market includes every householder within reach of the market. When eggs are a dollar a dozen there are individuals who are not potential buyers and do not form part of the market.

Markets in General

It is evident that many of these factors which fix markets are very flexible and for that reason it is impossible to more than approximate the limits in any direction in many cases. There are markets which are very well defined and which may be studied statistically with great accuracy. Such world wide markets as those of copper, sugar, cotton, etc., are subject to close analysis, as are the produce markets of large cities, such as New York or Philadelphia. The market for certain commodities, as for instance certain chemicals, are absolutely definite.

The factors which limit markets, whether they are very definite or otherwise, are continually changing.

One of the principal reasons why many market analyses fail is because the market of yesterday is not the market of today and the relations of supply, demand and price, which influenced yesterday's market do not influence today's in the same manner.

Supply

Definition: That volume of any commodity which is offered for sale in any market.

If we are to reconcile supply with "The desire to sell," we must so define supply as to make it a measure of this "desire." A commodity, to be of interest in any market, must be offered for sale. The fact that a greater or less volume is in actual existence is not of interest to the buyer if he cannot buy. The actual **desire** of the seller is an intangible something which may only be measured in terms of its affect. The affect of the seller's desire must be measured in terms of the volume which he offers for sale. Inasmuch as the seller's desire is dependent upon price, its measure must be expressed as a volume at a price.

The supply is not always measured by the volume of any commodity which is "on hand," insofar as the law of supply and demand is concerned. This applies, among other things, to commodities which are seasonal, such as fruits, vegetables, eggs, etc. There is

a season of prolific egg production, which occurs regularly every year. During this time more eggs are produced than can be sold to the consumer at any price. The price to the consumer is not directly influenced by the total number of eggs "on hand." In the case of potatoes in a belt of potato production or peaches in the region of peach growth, the price to the consumer bears no relation to the total "on hand."

The supply may be less than the amount "on hand." The supply may be potential either wholely or in part. Contracts for the future delivery of cotton or wheat or for manufactured goods may be made upon "supplies" which do not exist at all. These potential volumes must be considered as part of the supply in any economic study, as they have an influence upon price.

Deficiency in Supply

Definition: Whenever the supply is such that competitive buying raises prices to a point which brings about fundamental economic changes in the lives or pursuits of the consumer, such a supply is deficient.

When eggs are 30 or 40 or 50 cents a dozen, the average householder shifts his menu slightly but continues to include eggs in his diet. If eggs reach one dollar it becomes necessary for him to forego the use of eggs as a part of his menu. Since eggs are considered to be an essential part of a well regulated diet, the supply is deficient when prices become prohibitive to the average householder.

In the case of a manufacturer, if the price of raw material rises to a point where it is necessary for him to change his design or substitute other raw material or shut down his plant, then, from his standpoint, the supply is deficient.

Excess of Supply

Definition: Supply is excessive when the volume is greater than that which may be sold at a reasonable profit plus such volume as may be stored with reasonable expectation of future profit.

Normal Supply

Definition: The volume of any commodity which is bought and sold when prices allow of the normal use and storage of that commodity. Use is "normal" as long as there is no fundamental change in social or industrial conditions brought about by changing prices. The supply is "normal" whose volume is between the extremes of an excess and a deficiency of supply.

Type Market

The following discussion is an attempt to illustrate more fully the conditions of normal supply and excess and deficiency of supply.

Let it be assumed that we have a community so situated that it is impracticable to ship eggs in or out in quantity and that, therefore, the supply of eggs is limited by the number of hens in this particular region and the rate at which the hens lay. There are no eggs in storage.

At the time when this discussion opens, there are enough hens to supply five eggs per capita per day and the price is 45 cents per dozen. Assume that this supply is all consumed daily and that every consumer is satisfied.

In the course of events a cold wave arrives and the hens lay at a rate which will supply only four eggs per capita per day. This causes competition between buyers and the price becomes 60 cents per dozen. However, the consumers are all satisfied with four eggs at 60 cents in place of five eggs at 45 cents.

Still later the cold weather reduces laying to a rate which is the equivalent of but three eggs per capita and competition between buyers raises the price to $1 per dozen. Here a new situation enters because the baker, who used one egg per capita per day in his products, is unable to pay $1 for eggs without increasing the price of his products and to increase the price of his products means to cut his sales and profits. At about this point the prices in restaurants and soda fountains begin to be affected by the price of eggs.

It is quite possible that a reduction in the supply of eggs to two per capita or one per capita would cause little or no advance in price. A new feature enters here because the cost of production of the one egg per capita may be more than $1 per dozen, due to the overhead of carrying hens which are not producing at that particular time.

Assume now that the supply moves in the opposite direction from the supply of five eggs per capita at 45 cents and that the supply becomes six eggs per capita per day and the price 30 cents, then seven eggs per day at 25 cents and then eight eggs at 20 cents. In this market, this we will assume, is the maximum consumption which may be reached. It is impossible to sell to the consumer nine eggs per capita at any price. This does not mean that the total demand is limited to eight eggs per day because there may be those who "desire to buy" eggs to be stored for possible future profits.

However, if nine or ten eggs per capita per day come into the market, it is very evident that the price will be governed not by the demand for the consumer but by the demand of those who are willing to buy eggs for storage. The influence of the consumer becomes weaker and weaker as the supply increases.

A point may be reached in the volume of eggs being offered for sale when there will be no demand for storage. When the reasonable possibility of profits fades then the storage demand fades. As prices decline, another feature enters and that is the cost of production. Below a certain point the production of eggs ceases to be profitable. At the two extremes of too few eggs and too high a price and too many eggs and too low a price the brunt of the economic situation falls upon the producer. In both cases he has to make the decision as to how many hens he shall keep, even at a loss, in order that he may have enough hens to meet the demand at a later time.

1	egg	per	capita	per	day	at	?	Phase of Deficiency of Supply — No profits to Producer.
2	"	"	"	"	"	"	?	
3	"	"	"	"	"	"	$1.00	
4	"	"	"	"	"	"	.60	
5	"	"	"	"	"	"	.45	
6	"	"	"	"	"	"	.30	Phase of Normal Supply
7	"	"	"	"	"	"	.25	
8	"	"	"	"	"	"	.20	
9	"	"	"	"	"	"	?	Phase of Excess of Supply — No profits to Producer.
10	"	"	"	"	"	"	?	
11	"	"	"	"	"	"	?	

The Three Phases of Trade

The market illustrated in the previous paragraphs defines three phases in the general price law. The first and the last phases have partial phases which might readily be raised to the dignity of separate phases.

(To be concluded next week)

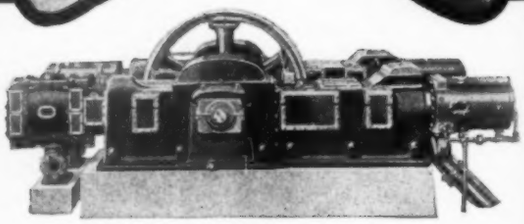
New Map of New Mexico Ready in 90 Days

Denver, Colo.—Manuscript copy for the new State map of New Mexico has been delivered to the contractor for photolithographing and printing and the maps will be ready for distribution within 90 days. The map represents an entirely new compilation, and exhibits the public land survey system throughout the State as of the date of publication. Previous edition of the map was last issued in 1912.

Rice County Well Makes 45 Barrels Hour

Wichita, Kansas.—Independent Oil & Gas Company's Miller 2, northwest of the northeast of the northeast of section 3-21-6w, Rice County, has cleaned itself out and after being agitated early last week made 45 barrels an hour. This well was first completed May 27 for 1164 barrels from 3364-86 feet.

BESSEMER



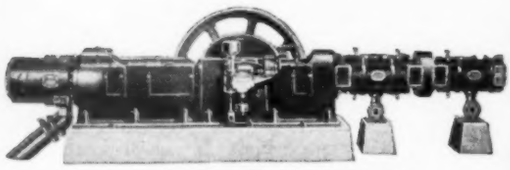
Bessemer Type Ten Compressors

Bessemer Type Tens are two cycle, direct gas engine driven units of unusual simplicity and exceptional sturdiness. They are ruggedly built throughout to insure long, uninterrupted service, and all parts are quickly accessible for any necessary adjustment or replacement.

The compressor cylinders are of the Bessemer VH Type with an unequalled compression efficiency—and can be secured for operating at pressures up to 1000 pounds.

Bessemer Type Ten performance is unmatched for gasoline plant service, booster stations and for air-gas lift work.

Built in single cylinder 80 H. P. units and 165 H. P. twin cylinder units. (These ratings based on 180 r. p. m.)



Bessemer Tandem Compressors

For two stage work where a single cylinder unit will suffice, a Bessemer tandem is the ideal compressor.

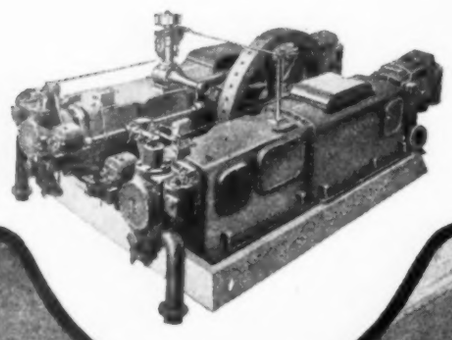
These Bessemers are available in either two cycle or four cycle type to meet all requirements or preferences. The power end is identical with that of the Type Ten single for the two cycle units and with the Type FC single for the four cycle units.

The compressor cylinders are mounted in tandem on the power end bed plate with the low pressure cylinder next to the main frame. The assembled unit is sturdy, compact and highly efficient, and can be used for any type of compressor service.

Bessemer Type FC Compressors

Where a four cycle compressor is preferred the Bessemer Type FC offers outstanding value. In construction principles it embodies all of the features that have made Bessemer performance so outstanding—crosshead construction, overstrength in every part, easily adjustable and accessible and with an unequalled mechanical and compression efficiency.

The valve assembly is unusually simple for a four cylinder machine, and in actual service it has unfailingly demonstrated its superiority in the four cycle class.



COMPRESSORS

Unexcelled in Economy, Reliability, Efficiency

BESSEMER COMPRESSORS are outstanding in *every* feature that determines the utility of a compressor for its owner.

In fuel economy Bessemers have no superior. Both Bessemer four cycle units and Bessemer two cycle units have as low (or lower) a gas consumption as any other compressor of a similar size and type. Bessemer maintenance economy is unmatched in any compressor class, on any compressor service. Thousands of installations are giving continuous proof that Bessemers cost less to run and *keep running.*

In reliability of performance Bessemer compressors have long set the standard of compressor service for the Oil Industry. 99%+ running time during a decade or two (or more) of service is the rule, not the exception, with Bessemers.

And along with such outstanding economy and reliability goes Bessemers' greater operating efficiency. Both in mechanical and compression efficiency Bessemers have no equal—a statement that can be easily proved on any job.

Any Bessemer Compressor user will confirm our statement that Bessemers out-point any other compressor built today, point by point—feature by feature.

A line of Bessemer Twin Type Ten Compressors in the Cromwell plant of the Phillips Petroleum Company.

Bessemers are standard equipment in plant after plant of the largest and best known oil companies—proof of their greater economy and better performance.

THE BESSEMER GAS ENGINE COMPANY
York Street ∴ ∴ ∴ Grove City, Pa.

Texas Company Well Extends Big Creek

Houston.—The Texas Company recently extended the productive area considerably at Big Creek, Fort Bend County, bringing in the Wheat 2 test for 1100 barrels of 22.8 gravity pipe line oil from 3030 feet. This well is in the southeast part of the field, and is about 2000 feet in that direction from the nearest producers, The Texas Company's Fee 2, Fee 3 and Fee 4. These wells on the fee tract are producing from around 3800 feet, and are yielding oil of higher gravity than that of the new well on the Wheat lease. The Texas Company controls all acreage within a wide radius from the new well. The lease on which it is located comprises 1340 acres.

On Tuesday of this week the Wheat 2 was producing at the rate of about 300 barrels daily.

Make Geophysical Tests on Large Area

Houston.—The Louisiana Land & Exploration Company is engaged in an extensive seismograph program in South Louisiana on lands comprising 2,000,000 acres extending from Sabine Lake on the west to the Mississippi River on the east. Two seismograph troops are at work on a program which will require between six and twelve months to complete, depending somewhat on the weather conditions.

This company is successor to The Border Research Corporation, which originally brought together the acreage now under investigation. That company also drilled six tests on State leases—under the waters of Sabine Lake, Calcasieu Lake, Mallard Bay, Vermillion Bay, West Cote Blanche Bay, and Grand Lake. Four of these tests were completed as failures, namely: the Sabine Lake 1, which was carried to 3335 feet; Calcasieu Lake 1, abandoned at 5309 feet; Mallard Bay 1, 3518 feet; and Vermillion Bay 1, abandoned at 3214 feet. The West Cote Blanche 1 is drilling at 1913 feet, and the Grand Lake 1 is shut down at 4863 feet waiting for drill stem.

The Louisiana Land & Exploration Company has been financed largely by Dillon, Read & Company, New York bankers, the Amerada Petroleum Corporation and Henry Timken, the roller-bearing manufacturer. The development program is being carried out under the supervision of E. DeGolyer, president of the Amerada Petroleum Corporation by F. W. DeWolf, general manager, who was previously connected with the Humphreys interests. Offices of the company are in the Chronicle Building, Houston.

The new company has taken over the drilling obligations of the former company, and plans an active program of drilling on all domes which may be found by seismograph exploration as well as some other properties which are believed on present knowledge to merit drilling.

The properties under investigation include approximately 1,100,000 acres of Louisiana State leases, 150,000 acres of other commercial leases in La Fourche and Terrebonne Parishes, and 700,000 acres of lands owned in fee lying east of the Atchafalaya River and for the most part south of Houma.

Attention is being given first to the State leases. Following this the other properties will be investigated.

The seismograph or geophone troops are being furnished by the Geophysical Research Corporation through the Amerada Petroleum Corporation.

Edgerly Test Finds First Salt Indication

Houston.—Indication of a salt dome was found late last week in the Edgerly field, Calcasieu Parish, Louisiana, when Ellis & McDaniel's Eckert 1 cored five feet of salt, from 3991 to 3996 feet. Heretofore no indications of a dome have ever been found in the field, either by drilling or by geophysical investigation. The Ellis & McDaniel test went through 19 feet of sand immediately above the salt, and early this week was preparing to test.

The test is located in the northeast corner of the field, being 50 feet each way out of the northwest corner of block 13 of the Koonce subdivision, Section 28, Township 9 south, Range 11 west.

Working Over Hines Well at Spindle Top

Houston.—Preparations are being made to work over the Hines Oil Company's Weed 1 in the southwestern part of the field at Spindle Top. This is the well which recently came in running wild, making about 5000 barrels initial production.

Turnbow et al's Weed 1, which is on the same one-acre tract on which the Hines well is located, is still flowing. Its production is being handled by the Gulf Pipe Line Company. This No. 1 was the only one ever drilled by Turnbow et al on the Weed acre.

Landreth Moves Offices to Fort Worth

Fort Worth.—Headqurters of the Landreth Production Corporation, which is one of the large independent oil producers in West Texas, have been transferred from Breckenridge, Texas, to Fort Worth. Office space has been taken in the new Petroleum building. Ed. A. Landreth is president and actively in charge of the company, and W. M. Smith is manager. Others in the Fort Worth office include L. A. Pocock and A. F. Dabney.

Deep Well Is Back on Production

Houston.—The Texas Company's House 20, which recently discovered a new deep sand in the north extremity of Humble field, is again producing, following washing and bailing, which was resorted to when the well went to mud five days after completion. It came back late last week, making 215 barrels, and increased within 24 hours to 1500 barrels. On Tuesday of this week it was producing at the rate of 760 barrels a day.

This well is one of the deepest producers ever drilled in the field, its depth being 3704 feet. It is on the north side of the San Jacinto river, being one of only four producers in the extention of the field on that side of the river. All of the other three wells are approximately 2800 feet deep, and gauged initial yields of only 150 to 300 barrels:.

The House 20, on the other hand, came in a few weeks ago as the largest producer completed in the field for years. During the first 10 hours after it was completed at 3704 feet it produced at the rate of 3696 barrels a day, but then it began to decline, the production for the first 24 hours after completion amounting to about 2800 barrels.

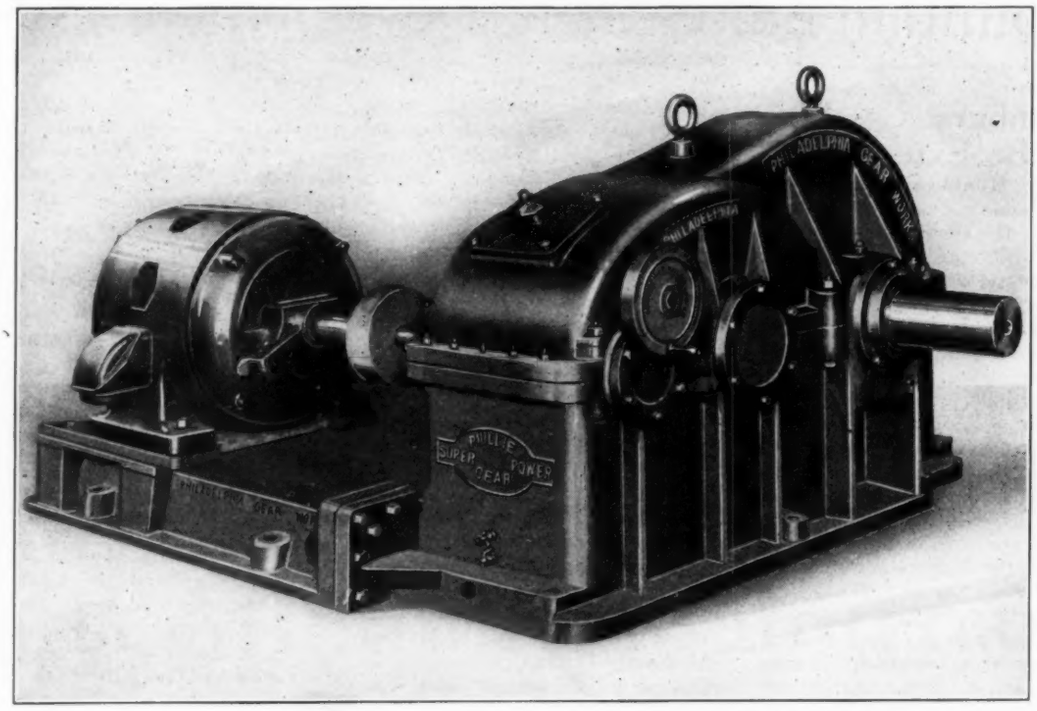
West Columbia Producer Continues Increase

Houston.—The Texas Company's Hogg 83 at West Columbia, which was brought in over two weeks ago for 300 barrels, continued to increase after its completion until early this week it was producing over 2300 barrels a day. For several days during the latter part of last week it was making between 1600 and 1700 barrels daily, and it was believed that the high mark had been reached, but its production suddenly began climbing again.

Roxana Completes Fifth Well Near Madison

Wichita, Kansas.—Roxana Petroleum Corporation and McDougal and Schwartz's Sheets 3, southwest of the northwest of the northeast of section 23-22-11, northern Greenwood County, made 12 barrels an hour Saturday, September 17, from 1853-96 feet after a 100-quart shot, making the fifth well for these operators on this lease, which is located near Madison.

Dick Tippett, 47, driller in Oklahoma oil fields for many years, died at his home in Blackwell, Oklahoma, September 12, following an illness of almost two years. His body was moved to Peoria, Illinois, for burial. He is survived by his wife.



The above Unit is equipped with steel cut Herringbone Gears and hardened Nickel Steel Pinions. The High and Second Speed Shafts are mounted on Timken Bearings, while the First Drive is mounted on ring oiling Bronze Bearings. The necessary Speed changes for "pumping" and "Pulling" are easily accomplished by the single turn of a (properly indicated) Hand Wheel, on the outside of the gear casing. This is an "exclusive" Philadelphia Feature,—and eliminates the necessity for removing cover of gear casing and the changing of gears.

Announcing the New

Philadelphia

OIL PUMP GEAR UNIT

—to be displayed during the TULSA EXPOSITION

~Sept. 24 to Oct. 1~

This 2-Speed Philadelphia Oil Well Pump Unit empodies "exclusive features" of design and construction which have proven to be the "last word." We shall welcome the opportunity to go over this Unit in detail with you, and show it to you in OPERATION—AT TULSA.

Oil Well Pump Units made by Philadelphia, are not new—they have been successfully used in the Texas, Oklahoma and California fields, and have proven their "true worth."

The NEW PHILADELPHIA 2-SPEED DOUBLE REDUCTION UNIT is merely a "great improvement" upon a previously satisfactory apparatus.

See this Unit "in operation" during the TULSA EXPOSITION.

NOTE — *The Philadelphia 2-Speed Double Reduction Oil Well Pump Unit is the result of nearly a Half Century's Experience in the making of Gears and allied Power Transmission Devices.* — **NOTE**

Main Office and Plant Erie Ave. and G St. Phila., Pa.

PHILADELPHIA GEAR WORKS

Manufacturers of Industrial Gears and Speed Reducing Units

Mid-Continent Distributors—Petroleum Electric Co.

217 E. Archer Street — Tulsa, Okla.

Mountain States Field Development Notes

Kevin-Sunburst Gas Line May Be Extended

Great Falls, Mont.—Should a large and definite quantity of gas become available upon the development of the Sweetgrass Hills area in northern Montana, it would mean the extension of the Hope Engineering Company's pipe lines from the Kevin-Sunburst field about 30 miles to that locality. A. W. Patterson of Spokane and a group of Anaconda associates who are developing the Sweetgrass Hills area, have a contract with the Hope interests whereby that concern will buy half of the gas that will be required for Great Falls, contingent upon the ability of the group to develop enough gas to justify the investment of some $500,000 necessary for the 30-mile extension.

Supply of natural gas for the city of Great Falls will be available possibly by January 1. Preliminaries are started for the laying of a 115-mile line of 12-inch and 10-inch pipe from the Kevin-Sunburst field to the city. Pipe will cost $1,500,000 and an order for this has already been placed. Survey crews are at work under the direction of J. F. Cadby and A. N. Layfield.

There are two producing wells, one drilling well, three wells rigging up and eight locations on Bannatyne Dome, the new field in Sweetgrass Arch between Kevin-Sunburst and the city of Great Falls. No completions will be expected before another fortnight.

Three wells have been announced as locations on Pondera Dome in the Conrad fold, Sweetgrass arch. This structure was proved for gas and some oil early in the spring by the Arnold group, but the well was never thoroughly tested due to litigation concerning title to the land.

Montana-Dakota Power Company has added 13 towns to the number served before the completion of its high-line construction program for 1927. It has built 103 miles of additional line and now furnishes electrical energy to 70 cities and towns in western North Dakota by means of 700 miles of power transmission line.

Bureau Reports Colorado Well Average High

Denver, Colo.—U. S. Bureau of Mines reports there to be 130 producing wells in Colorado on January 1, 1927, compared with 80 on the same date in 1926. Average production per well was 60.3 barrels, compared with 64.1 barrels. This average was exceeded in 1926 only by the Gulf Coast area in Texas where wells averaged 64.6 barrels.

Start Interesting Test in Northwest Colorado

Denver, Colo.—Another new drilling project which will be of interest to operators in Utah and Northwestern Colorado is that which Midwest Refining Company has spudded 20 miles west of the Colorado line, 10 miles southeast of Vernal, Utah, on Ashley Valley structure, section 23-5s-22e, on the Utah side of the line. Operating contract is with the Utah Southern Oil Company and the Utah Oil Refining Company. A heavy flow of gas was struck on this structure three years ago, and if oil is struck in considerable quantity it will have an important bearing upon the early extension of the Moffat road westward from Craig.

Utah Refining Company Takes Over Franchise

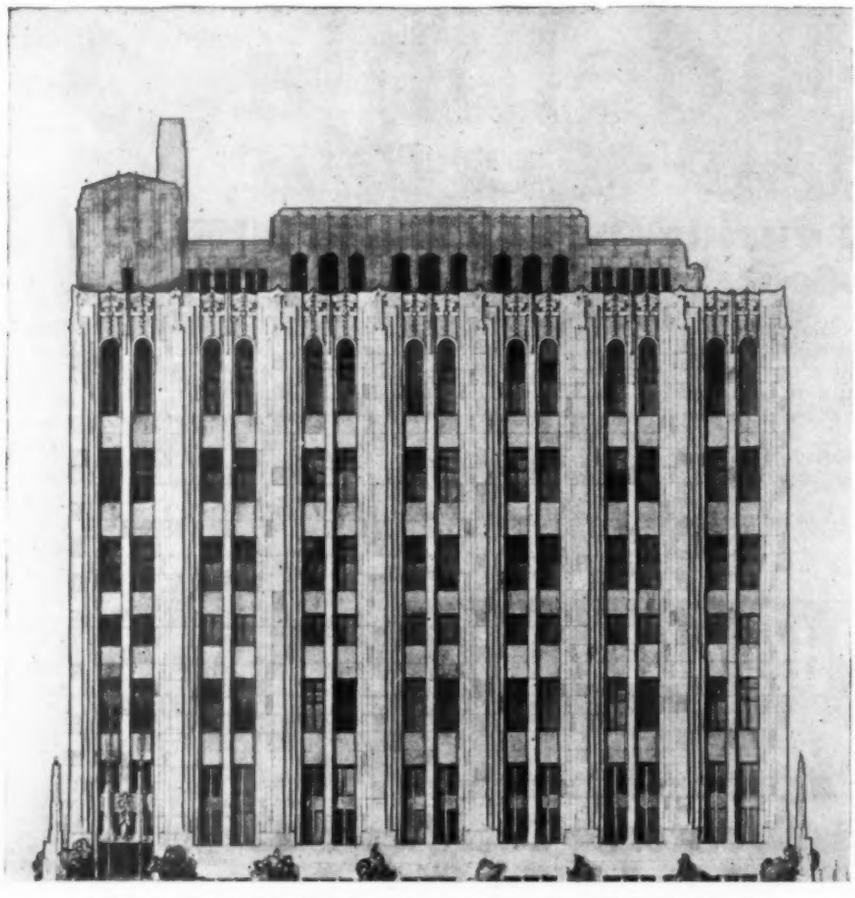
Rock Springs, Wyo.—Utah Oil Refining Company is reported to have taken over the pipe line franchise from California Petroleum Corporation to lay a line from the LaBarge field to railhead at Opal. Construction will begin immediately, it is said. Line will be 45 miles in length and of six-inch pipe.

New Tulsa Building Will House Associations

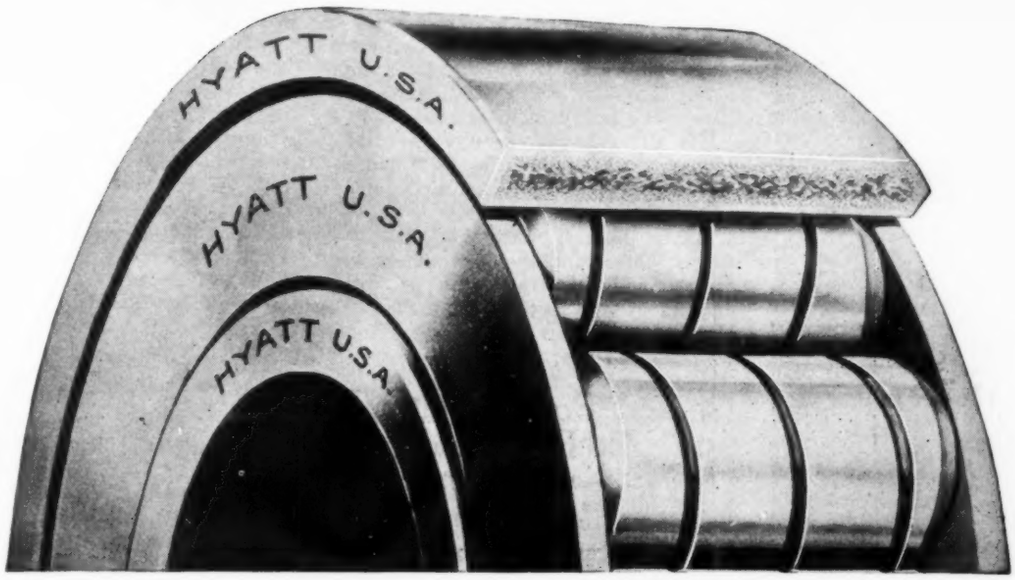
Tulsa.—Organizations and associations allied with the oil industry for the purpose of becoming more closely connected, are grouping their Tulsa headquarters in a single building, thus deriving benefits from closer assocation in the work held in common.

On completon of the Tulsa Chamber of Commerce and Club Building within the near future several of these organizations are occupying space in this building, includng orgainzations with headquarters in Tulsa and also organizations with branch offices located in this city. The Mid-Continent Oil and Gas Assocation, Association of Natural Gasoline Manufacturers, and the American Association of Petroleum Geologists have obtained offices in this new building, located at Fifth Street and Cincinnati Avenue. Other organizations and societies allied with the industries are expected to contract for space in the building prior to its opening.

The Tulsa Chamber of Commerce and Tulsa Club headquarters will be located in the building, and also the Junior Chamber of Commerce of Tulsa.



NEW TULSA CHAMBER OF COMMERCE AND CLUB BUILDING



Hyatts Minimize Maintenance

IN the modern development of mechanical equipment Hyatt Roller Bearings have reduced maintenance costs so completely that all industry is taking up Hyatt economies and performance.

Experience has shown that their only attention and expense are infrequent applications of lubricant. Housings are sealed against grit, dirt, wear and breakdowns. Repairs and replacements are unusual.

Hyatt bearings roll with watch-like precision—yet absorb vibration, and quickly adjust themselves to irregularities of the machines and their load. They relieve the strain of starting loads on gears and motors.

Year after year, under the most abusive conditions, in every phase of mechanical service, Hyatts are cutting overhead and eliminating delays. You, too, can reduce your production and maintenance costs with Hyattized equipment.

HYATT ROLLER BEARING COMPANY

Newark Detroit Philadelphia Chicago Oakland Pittsburgh Cleveland Worcester

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

Say you saw it in The OIL WEEKLY

J. F. McKELVEY

Vulcan Steel Tank Corp. Operating at Tulsa

Tulsa.—Full operation of the new plant of the Vulcan Steel Tank Corporation in Tulsa now is under way and production is expected to be increased in volume as the company's business is extended. Modern equipment has been installed throughout.

J. F. McKelvey, formerly connected with the Pioneer Tank and Boiler works, is president of the Vulcan Steel Tank Corporation and J. S. Warren, general manager of the Maloney Tank Manufacturing Company, both of Tulsa, is vice president of the new concern, whose plant has been built in the East Tulsa industrial district along the Frisco railway. Other officers of the company include E. P. Day, secretary, and L. M. McKelvey, sales engineer. These, with R. B. Millard, constitute the board of directors.

The plant has a capacity to employ 100 men. A part of the plant will be given over to the manufacturing needs of the Southwestern Engineering Corporation in serving the Mid-Continent field. This company manufactures refinery and natural gasoline plant equipment and activities in the Mid-Continent is under the direction of Mr. Millard of Tulsa.

J. S. WARREN

Geared Pump Unit Will Be Exhibited

Wichita, Kans.—The widespread and successful use of geared long stroke pumping attachments in obtaining deep production has brought about the development of a completing pumping unit, compact and self-contained, by the Reschke Machine Works Company of Wichita. The company plans to have one of the pumping units on display at the International Petroleum Exposition in Tulsa, September 24 to October 1.

The Reschke Machine Works Company has perfected a complete geared unit in various sizes that can be used for shallow as well as deep pumping. This unit has the long stroke feature and is equipped with manganese steel gears and roller bearings that insure long life and extremely light and easy running.

The Reschke units are equipped with 6, 8 or 10 horsepower engines for shallow producers and up to as high as 25 or 35 horse power engines for deeper production.

New Petroleum Building At Fort Worth Occupied

Fort Worth, Texas.—The Petroleum Building, a million dollar office structure, has been completed and practically filled with oil companies, operators and other tenants allied with the oil industry. This structure was constructed by the Dulaney-Johnston Investment Company, which is controlled by R. O. Dulaney and J. P. Johnston, both veteran oil operators. The building is 14 stories in height, and the exterior is of Bedford Color Art Stone, resting on polished bases of variegated "Oriental" granite. It is in the heart of the business and shopping district.

The Pure Oil Company is occupying two complete floors, and has additional space reserved, having moved its offices from Mexia to Fort Worth upon the completion of the new building. Gulf Production Company also has a lease on two floors, and will move into its quarters within a few weeks.

The following oil companies and operators have space in the Petroleum Building:

Pure Oil Company, Gulf Production Company, Landreth Production Corporation, M. W. Boyle, Shadboldt & Creighton, W. A. Tunstill & Sons, Burg & Peters, Geologists, C. Andrade III, Forest Oil Corporation, H. R. Edwards, Rowan Drilling Company, Roy Nichols, Miller Drilling Company, C. E. Simmons & Company, A. M. Griffth, W. C. Holliday, F. H. Scott, A. S. Mims, Eastland Oil Company, D. E. Little, Ed S. Hill, L. C. Turman, C. W. Webster, L. D. Ladd, S. H. Jenkins, Jno. L. McMeans, Renee Oil Company, F. K. Campbell, Jr., Connor Croft & Rehn, Gilliam & Logan, J. Mentor Caldwell, G. S. Anderson, C. C. Massey, Ocean Oil & Pipe Line Company, L. G. Bradstreet, Ed V. Parsons, Fort Ring Oil & Gas Company, Brown, Cady & Donnelly, Federal Supply Company, Heydrick Mapping Company, Zingery Map Company, Logan Map Company.

Marco feed water heaters for use in steam power plants are fully described in a catalog issued by the Marshall Heater Company, of Dayton, Ohio.

The feed water heater and purifier and oil extractor is combined as a single unit, designed for general power plant needs.

Copies of the bulletin can be secured from the company, on request.

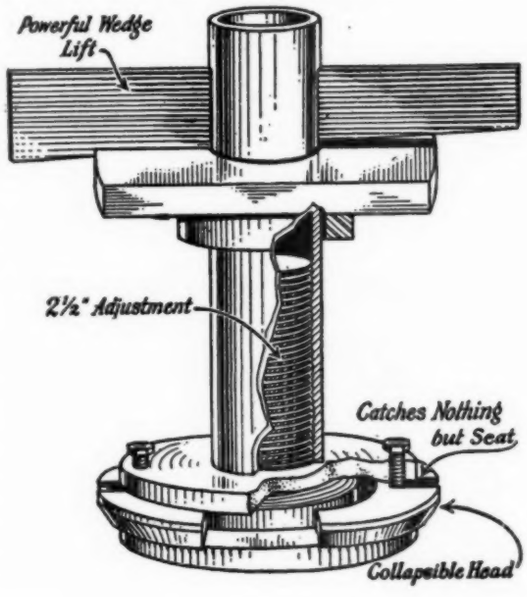
Mission Sales Announces Seco Valve Seat Puller

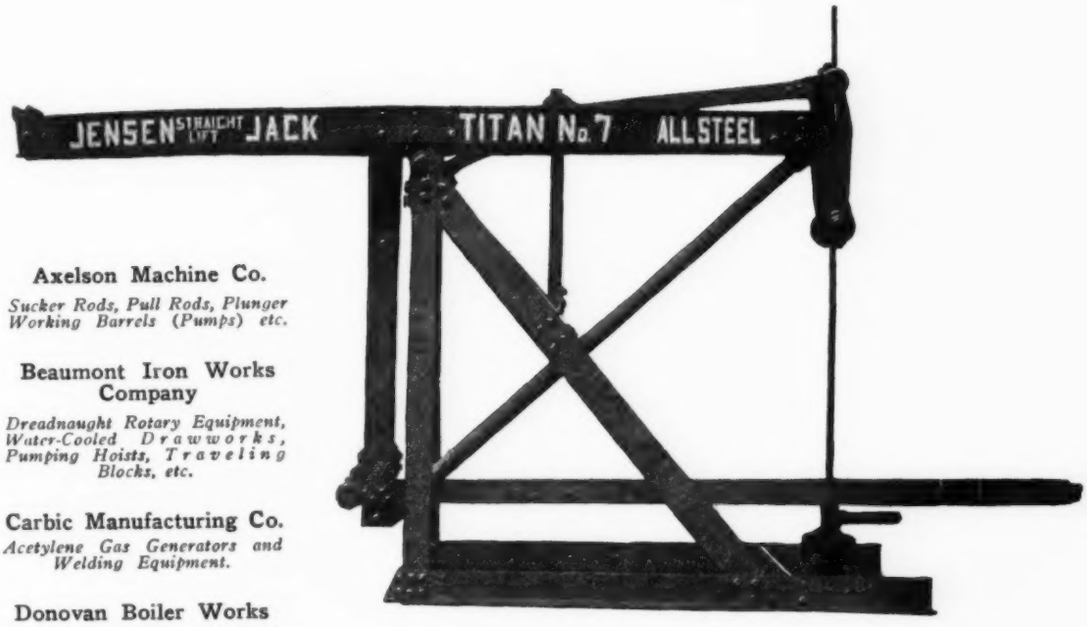
The Mission Sales Company, Esperson Building, Houston, announces a new valve seat puller known as the Seco. The outfit is a new invention to remove valve seats when they are stuck. It is claimed that a cutting torch is not necessary with this puller.

The Seco is made of steel throughout, and is made for all sizes of pumps.

Seco liner pullers of the same design are also ready for distribution.

More information will be mailed by the company, on request.





Axelson Machine Co.
Sucker Rods, Pull Rods, Plunger Working Barrels (Pumps) etc.

Beaumont Iron Works Company
Dreadnaught Rotary Equipment, Water-Cooled Drawworks, Pumping Hoists, Traveling Blocks, etc.

Carbic Manufacturing Co.
Acetylene Gas Generators and Welding Equipment.

Donovan Boiler Works
Oil Country Boilers and Tanks

Frick-Reid Service Belting
Rubber Covered and Friction Surface

Jensen Bros. Mfg. Co.
Pumping Jacks

National Transit Pump and Machine Co.
Power and Steam Pumps

J. P. Ratigan
Grips, Clamps, Beam Hangers

Joseph Reid Gas Engine Company
Gas and Oil Engines, two and four-cycle, Band Wheel and Direct Drive Pumping Powers.

Whitlock Cordage Co.
Manila Cordage, Bull Ropes and Cat Lines.

Lapweld and Seamless Tubular Goods

Walworth Company
Valves, Fittings and Tools for Steam, Water, Gas, Oil and Air.

Rossendale-Reddaway Company
"Camel Hair" Belting, Belt Clamps.

Engineering Crews
for the installation of Pumping Powers and related equipment.

JENSEN
JACKS

THIS TITAN NO. 7 is the heaviest jack in the world, built to make good the statement that there is a Jensen Jack for every well, regardless of the depth, the stroke required, the size of the tubing or the volume of the fluid.

All Jensen Jacks have an easy, straight, vibrationless stroke that saves other equipment and makes for maximum production.

We maintain Power Building Crews all over the Mid-Continent, versed in the technique and practice of pumping wells. The co-operation of this engineering department is yours to command.

Frick-Reid
Supply Co.

Tulsa, Okla. Pittsburgh, Pa.

West of the Mississippi, Stores Everywhere.
East of the Mississippi, The Frick & Lindsay Co.

CRUDE OIL PRICE QUOTATIONS

PRICE CHANGES

September 14.—Effective at the opening of the market today, Magnolia Petroleum Company posted a revision of its Mid-Continent crude prices, amounting to an increase of 15 cents per barrel. With the exception of grades below 30 gravity, Magnolia's new price is the same as all the other Mid-Continent purchasers. Magnolia's price on all grades below 30 is $1.05 per barrel.

September 14.—Effective at the opening of the market today, Humble Oil & Refining Company eliminated the special posting made on Lytton Springs crude a short time ago and restored this field to the regular North Texas (Mid-Continent) schedule.

September 14.—Effective at the opening of the market today, Louisiana Oil Refining Company posted a 10 cent reduction on Urania, Louisiana, crude.

September 17.—Effective at the opening of the market today, Louisiana Oil Refining Company posted a 10 cent reduction in Smackover crude. The cut was met by Standard of Louisiana, Atlantic Oil Producing Company, and Magnolia Petroleum Company.

CURRENT POSTINGS

EASTERN STATES

	Sept. 21 1927
New York Transit	2.65
Bradford District	2.65
National Transit	2.55
Southwest	2.55
Eureka	2.50
Buckeye	2.25
Macksburg	2.80
Gaines	2.60
Somerset	1.70
Cabell	1.60
Ragland	.95
Corning, 35-cent grade	1.45
Corning, 25-cent grade	1.35
Keister	1.30

CENTRAL STATES

Illinois	1.60
Indiana	1.48
Lima	1.70
Plymouth	1.30
Princeton	1.60
Waterloo	1.18
Wooster	1.57

WESTERN KENTUCKY

Posted by Stoll Refining Company for crude from Allen, Warren, Franklin, Davies, Barren, All grades 1.50

MID-CONTINENT

Prairie, Sinclair, Gulf, Texas

	Sept. 21 1927
28 to 28.9 gravity	1.12
29 to 29.9 gravity	1.14
30 to 30.9 gravity	1.16
31 to 31.9 gravity	1.18
32 to 32.9 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.30
38 to 38.9 gravity	1.32
39 to 39.9 gravity	1.34
40 to 40.9 gravity	1.36
41 to 41.9 gravity	1.38
42 to 42.9 gravity	1.40
43 to 43.9 gravity	1.42
44 to 44.9 gravity	1.44
45 to 45.9 gravity	1.46
46 to 46.9 gravity	1.48
47 to 47.9 gravity	1.50
48 to 48.9 gravity	1.52
49 to 49.9 gravity	1.54
50 to 50.9 gravity	1.56
51 to 51.9 gravity	1.58
52 and above	1.60

Magnolia Petroleum Company

Below 30	$1.05
30 to 30.9 gravity	.16
31 to 31.9 gravity	1.18
32 to 32.9 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.30
38 to 38.9 gravity	1.32
39 to 39.6 gravity	1.34
40 to 40.9 gravity	1.36
41 to 41.9 gravity	1.38
42 to 42.9 gravity	1.40
43 to 43.9 gravity	1.42
44 to 44.9 gravity	1.44
45 to 45.9 gravity	1.46
46 to 46.9 gravity	1.48
47 to 47.9 gravity	1.50
48 to 48.9 gravity	1.52
49 to 49.9 gravity	1.54
50 to 50.9 gravity	1.56
51 to 51.9 gravity	1.58
52 and above	1.60

NORTH AND CENTRAL TEXAS

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs crude.

Humble O. & R. Co.* and Texas Co.

	Sept. 21 1927
28 to 28.9 gravity	1.12
29 to 29.9 gravity	1.14
30 to 30.9 gravity	1.16
31 to 31.9 gravity	1.18
32 to 32.0 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.30
38 to 38.9 gravity	1.32
39 to 39.9 gravity	1.34
40 to 40.9 gravity	1.36
41 to 41.9 gravity	1.38
42 to 42.9 gravity	1.40
43 to 43.9 gravity	1.42
44 to 44.9 gravity	1.44
45 to 45.9 gravity	1.46
46 to 46.9 gravity	1.48
47 to 47.9 gravity	1.50
48 to 48.9 gravity	1.52
49 to 49.9 gravity	1.54
50 to 50.9 gravity	1.56
51 to 51.9 gravity	1.58
52 and above	1.60

Corsicana Heavy, 1.00 per barrel, posted by Magnolia.

*Until further notice, Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs crudes purchased at a gravity lower than 28 degrees will be paid for at the posted price for 28 degrees gravity.

SOUTH TEXAS

Mirando	1.00

SOMERSET

Grayburg

Below 33 gravity	$1.05
33 to 33.9 gravity	1.07
34 to 34.9 gravity	1.09
35 to 35.9 gravity	1.11
36 to 36.9 gravity	.13
37 to 37.9 gravity	1.15
38 and above	1.17

GULF COAST

Grade "A" all companies	1.20
Gulf Coast Light Oil, Below 2	1.15

(Continued on page 176)

CALIFORNIA CRUDE OIL PRICES AT THE WELL

Following are the current prices offered by Standard Oil Company for crude oil at the well: (Price per barrel of 42 galolns in fields indicated)

Gravity (degrees)	Signal Hill	Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Torrance	Richfield	Whittier La Harbra	Montebello	Coyotte Hill	Santa Fe Springs	Newhall McKittrick Kern River	Midway Sunset Elk Hills	Buena Vista Hills	Lost Hills	Coalinga	Wheeler
14-14.9	$ .85	$ .85	$ .85	$ .85	$ .85	$ ..	$ .85	$ .85	$ .85	$ .85	$ .85	$ ..	$ .75	$ .75	$ .75	$ .75	$ .75	$ .75
15-15.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
16-16.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
17-17.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
18-18.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
19-19.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
20-20.9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	..	.77	.77	.77	.76	.76
21-21.9	.86	.86	.86	.86	.86	..	.86	.86	.85	.85	.86	.85	..	.79	.79	.79	.77	.77
22-22.9	.87	.87	.87	.87	.87	..	.87	.87	.85	.85	.87	.85	..	.81	.81	.81	.78	.78
23-23.9	.88	.88	.88	.88	.88	..	.88	.88	..	.85	.88	.85	..	.83	.83	.83	.79	.79
24-24.9	.89	.89	.89	.89	.89	..	.89	.89	..	.85	.89	.85	..	.85	.85	.85	.80	.80
25-25.9	.90	.90	.90	.90	.90	.90	.90	.90	..	.86	.90	.86	..	.87	.87	.87	.81	.81
26-26.9	.92	.92	.92	.92	.92	.92	.92	.92	..	.87	.91	.87	..	.89	.89	.89	.83	.82
27-27.9	.94	.94	.94	.94	.94	.94	.94	.94	..	.88	.92	.88	..	.91	.91	.91	.85	.83
28-28.9	.96	.96	.96	.96	.96	.96	.96	.96	..	.89	.93	.89	..	.93	.93	.93	.87	..
29-29.9	.98	.98	.98	..	.98	.98	..	.98	..	.90	.94	.91	..	.96	.96	.96	.89	..
30-30.9	1.00	1.00	1.00	..	1.00	1.00	..	1.00	..	.91	.95	.93	..	.99	.99	.99	.91	..
31-31.9	1.03	1.03	1.03	..	..	1.03	..	..	..	..	..	.95	..	1.02	1.02	1.02	.93	..
32-32.9	1.06	1.06	1.06	..	..	1.06	..	..	..	..	..	.97	..	1.05	1.05	1.05	.95	..
33-33.9	..	..	..	..	..	1.09	..	..	..	..	..	.99	..	1.08	1.08	1.08	.97	..
34-34.9	..	..	..	..	..	1.12	..	..	..	..	..	1.01	..	..	..	1.11	.99	..
35-35.9	..	..	..	..	..	1.15	..	..	..	..	..	1.03	..	..	..	..	1.01	..
36-36.9	..	..	..	..	..	1.18	..	..	..	..	..	1.06	..	..	..	..	..	..
37-37.9	..	..	..	..	..	1.21	..	..	..	..	..	1.09	..	..	..	..	..	..
38-38.9	..	..	..	..	..	1.24	..	..	..	..	..	1.12	..	..	..	..	..	..
39-39.9	..	..	..	..	..	1.27	..	..	..	..	..	1.15	..	..	..	..	..	..
40-40.9	..	..	..	..	..	1.30	..	..	..	..	..	..	..	..	..	..	..	..
41-41.9	..	..	..	..	..	1.33	..	..	..	..	..	..	..	..	..	..	..	..
42-42.9	..	..	..	..	..	1.36	..	..	..	..	..	..	..	..	..	..	..	..

PETRECO

The "Official Oil Doctor's" Electrical Cure For Cut-Oil Losses

Consult your "Official Oil Doctors" concerning the "Petreco" Electrical Process for the dehydration of your emulsified crude, and the conversion of "cut oil" losses into immediate profits.

There is no mystery—no complications—no effort—no extravagance, in the application and operation of "Petreco." Its unit system of installation permits its application to small production and its expansion in convenient units to meet increasing requirements.

Petreco has proved its profit producing ability in all fields and on small production as well as the largest. Consult the "Official Oil Doctor" now, without obligation, and learn how to get the last possible cent out of every barrel of your production.

Write for our book, "The Electrical Process for the Dehydration of Crude Oil Emulsions," mailed on request.

PETROLEUM RECTIFYING COMPANY of CALIFORNIA

306 Union Oil Bldg. Los Angeles, Calif.

Petroleum Bldg. Houston, Texas

Say you saw it in The OIL WEEKLY

	Sept. 21 1927
25 to 25.9 gravity	1.17
26 to 26.9 gravity	1.19
27 to 27.9 gravity	1.21
28 to 28.9 gravity	1.23
29 to 29.9 gravity	1.25
30 to 30.9 gravity	1.27
31 to 31.9 gravity	1.29
32 to 32.9 gravity	1.31
33 to 33.9 gravity	1.33
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.37
36 to 36.9 gravity	1.39
37 to 37.9 gravity	1.41
38 to 38.9 gravity	1.43
39 to 39.9 gravity	1.45
40 and above	1.47

*Humble Oil & Refining Company's postings on Gulf Coast Light stop at 35 to 35.9. Its price on all crudes above 35 is $1.37 per barrel.

Magnolia Petroleum Company's postings stop at 31 to 31.9.

MARKHAM

The Texas Company

All grades	1.00

LULING

All grades	1.00

TEXAS PANHANDLE

(Gulf Refining Company and Kay County Gas Company)

Hutchinson, Carson and Gray Counties, all grades	.95

(Humble Oil & Refining Company and Magnolia Petroleum Company)

Hutchinson, Carson and Wheeler counties, all grades	.75

Gray County

(Humble Oil & Refining Company)

28 to 28.9 gravity	.80
29 to 29.9 gravity	.82
30 to 30.9 gravity	.84
31 to 31.9 gravity	.86
32 to 32.9 gravity	.88
33 to 33.9 gravity	.90
34 to 34.9 gravity	.92
35 to 35.9 gravity	.94
36 to 36.9 gravity	.96
37 to 37.9 gravity	.98
38 to 38.9 gravity	1.00
39 to 39.9 gravity	1.02
40 to 40.9 gravity	1.04
41 to 41.9 gravity	1.06
42 to 42.9 gravity	1.08
43 to 43.9 gravity	1.10
44 and above	1.12

(Humble Oil & Refining Company)

Crane, Upton, Crockett and Pecos counties, all grades	.60

Crane, Upton, Crockett* Counties

Gulf and Kay County Gas Company

Below 26 gravity	.70
26 to 26.9 gravity	.72
27 to 27.9 gravity	.74
28 to 28.9 gravity	.76
29 to 29.9 gravity	.78
30 to 30.9 gravity	.80
31 to 31.9 gravity	.82
32 to 32.9 gravity	.84
33 to 33.9 gravity	.86
34 to 34.9 gravity	.88
35 to 35.9 gravity	.90
36 and above	.92

*Gulf does not post in Crockett County.

Magnolia Petroleum Company and Kay County Gas Company

Howard County (Chalk Field)	1.05

Col-Tex Refining Company

Mitchell County	$ .93

WYOMING-MONTANA

Wyoming

Byron	1.33
Ferris	1.60
Elk Basin	133
Grass Creek	1.33
Rock Creek	1.25
Lost Soldier	.95
Lance Creek	1.33
Mule Creek	1.10
Notches	.65
Big Muddy	1.25
Osage	1.33
Hamilton Dome	.85
Pilot Butte	1.75
Torchlight-Greybull	1.55
Lander	.80
Simpson Ridge	.80
Rex Lake	1.10
South Casper Creek-Poison Spider	1.00

Salt Creek

Midwest Refining Company

	Sept. 21 1927
29 to 29.9 gravity	1.14
30 to 30.9 gravity	1.16
31 to 31.9 gravity	1.18
32 to 32.9 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 and above	1.30

MONTANA

Sunburst	1.35
Cat Creek	1.33
Lake Basin	2.20

NEW MEXICO

Artesia	1.00
Hogback	1.38

CANADIAN CRUDE

Oil Springs	2.18
Petrolia	2.11

*Bounty on Canadian crude is ¾ cent per gallon, or 26¼ cents per barrel.

LOUISIANA-ARKANSAS

(Standard of Louisiana, Louisiana Oil Refining Company, Gulf Refining Company of Louisiana and The Texas Co.) Homer, Haynesville, Caddo, El Dorado, De Soto and Chrichton.

Below 28 gravity	1.10
28 to 28.9 gravity	1.12
29 to 29.9 gravity	1.14
30 to 30.9 gravity	1.16
31 to 31.9 gravity	1.18
32 to 32.9 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.30
38 to 38.9 gravity	1.32
39 to 39.9 gravity	1.34
40 to 40.9 gravity	1.36
41 to 41.9 gravity	1.38
42 to 42.9 gravity	1.40
43 to 43.9 gravity	1.42
44 to 44.9 gravity	1.44
45 to 45.9 gravity	1.46
46 to 46.9 gravity	1.48
47 to 47.9 gravity	1.50
48 to 48.9 gravity	1.52
49 to 49.9 gravity	1.54
50 to 50.9 gravity	1.56
51 to 51.9 gravity	1.58
52 and above	1.60

Atlantic Oil Producing Company posts this same schedule on Homer, Haynesville, and West El Dorado.

Magnolia Petroleum Company has the same posting on Pine Island, Haynesville, Eldorado and Bull Bayou.

STEPHENS

(All Companies)

	Sept. 21 1927
Below 28	1.00
28 to 28.9 gravity	1.04
29 to 29.9 gravity	1.04
30 to 30.9 gravity	1.06
31 to 31.9 gravity	1.08
32 and above	1.10

SMACKOVER*

Below 24 gravity	$ .90
24 and above	1.15
Bellevue	1.25
Jennings	1.15
Vinton	1.30
Edgerly	1.30
Starks Dome	1.30
Urania	.90
Cotton Valley	1.00
Calion	1.00

*On September 20 the Standard Oil Company of Lousiana, Shreveport-Eldorado, Gulf Refining Co., the Atlantic Oil Producing Company and Magnolia Petroleum Company had met the Louisiana Oil Refining Company's reduction. The Texas Company had not met the change. Postings of this company were: Below 24 gravity, $1.00; 24 and above $1.25.

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

American Petroleum Institute Figures. Barrels of 42 gallons)

	Week Ended Sept. 10	Week Ended Sept. 3
AT ATLANTIC COAST PORTS—		
Baltimore	80,000	209,000
Boston	.....	.....
New York	514,000	256,000
Philadelphia	101,000	76,000
Others	113,0000	358,0000
Total	808,000	899,000
Daily average	115,429	128,429
AT GULF COAST PORTS—		
Daily average	.....	.....
TOTAL ATLANTIC AND GULF COAST PORTS—		
Total Atlantic and Gulf Coast Ports	808,000	899,000
Daily average	115,429	128,429
Daily average four weeks ended	118,893	115,286
DISTRIBUTION OF TOTAL CALIFORNIA RECEIPTS IS AS FOLLOWS:		
Crude	406,0000	430,000
Gasoline	237,000	167,000
Gas Oil	.....	.....
Fuel Oil	107,000	302,000
Lubricants	58,000	.....
Total	808,000	899,000

RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

American Petroleum Institute Figures. Barrels of 42 gallons)

	Week Ended Sept. 10	Week Ended Sept. 3
Baltimore	281,000	115,000
Boston	77,000	60,000
New York	249,000	600,000
Philadelphia	167,000	196,000
Others	243,000	326,000
Total	1,017,000	1,297,000
Daily average	145,286	185,286
AT GULF COAST PORTS—		
Galveston District	.....	50,000
New Orleans and Baton Rouge	284,000	.....
Port Arthur and Sabine District	.....	.....
Tampa	.....	.....
Total	284,000	50,000
Daily average	40,571	7,143
AT ALL UNITED STATES PORTS—		
Total	1,301,000	1,347,000
Daily average	185,857	192,429
Daily average four weeks ended	196,821	184,750

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The present standardized *line of Emsco All-Steel Rotaries and Draw Works is without a peer in range of service, as well as in quality, modern design, improved efficiency, and performance; embracing all the modern developments of our engineering and manufacturing experience; and their great superiority is due in a large measure to a process of selection and elimination.

There is an Emsco Rotary and Draw Works for every condition encountered in oil country work. Tell us your conditions and requirements and we will promptly send you complete data, drawings and specifications of the equipment designed especially for that service.

*Due to many requests for equipment for special purposes, and our desire at all times to assist operators with the various problems confronting them, we have developed a large number of different types and sizes of rotaries and draw works, each of which is functioning properly for the service intended. The large number of types represented, however, has necessitated designating some of these as "Special." Emsco Standard Rotaries and Draw Works are those which are designed and built for conditions prevailing in practically all fields, in which the service varies only in slight degree; and are the result of our process of elimination among all types previously built to obtain the best for the specific service involved.

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EMSCO STEEL EQUIPPED WELLS ARE SAFE

Flow of 100 Barrels Hour Revives Pleasant Hill Interest

Carterville well shows possibilities of oil production; only one new Trinity sand test started at Pine Island

SHREVEPORT, La.—At least one and possibly more wells will be drilled in the Pleasant Hill district of Sabine Parish following completion of a gusher well there during the past week. Moffitt et al's Moore 2, northwest corner of section 5-9-12, was bailed in from 3257 feet, flowing at the rate of 100 barrels per hour. Bottom of the hole is in a broken sand which was penetrated 22 feet. Moore 1, located in the opposite corner of the same 40, is now flowing 50 barrels daily. The latter well recently completed, extended the producing area approximately one mile southwest.

The Arkansas Fuel Oil Company is erecting derrick for Logan 11, a direct northern offset to the Moore 2. It is reported that other wells will be drilled in the vicinity, but no actual work has yet been started.

Completion of this well came as a surprise to local operators who have, seemingly, lost all interest in activities in the Pleasant Hill area since the field was brought in early during the year. Aside from the Moffitt well, and several wildcat operations, there are very few wells being drilled in the district. The Arkansas Fuel Oil Company, dicoverers of the field, were the principal operators during the time that activity was at its height; and this company is still running about three rigs.

Another interesting well completed in the Pleasant Hill territory last week was the Nabors 1 of Foster and associates, in Section 30-10-12, approximately one and one-half miles northwest of the discovery wells of the Arkansas Fuel Oil Company. This well was brought in from 3270 feet making around 5,000,000 feet of gas. It was originally started as a community test, being financed by all of the operators owning acreage in the field, but was recently taken over and completed by the Arkansas Fuel Oil Company. It is thought that more wells will be drilled in the vicinity of this gas well, in view of the fact that the Arkansas Fuel Oil Company owns a large amount of acreage surrounding it.

The completion of these two wells may result in a slight flurry of activity in the Pleasant Hill sector, which has now reached a stage of almost complete shut down, in so far as new drilling is concerned; and may result in bringing out a new producing territory. At last reports, the Moffitt well was flowing at the rate of better than 70 barrels an hour; and, while this is a considerable decrease, it is far better than any of the wells in the older producing field have held up. A peculiar feature of the Pleasant Hill area is the uncertainty of production, often described as "spotted production." It will be remembered that, early in the history of the field, it was predicted that the producing zone would trend to the northwest; and that this prediction was, apparently, proven to be wrong by the completion of the Louisiana Oil Refining Corporation's Logan 1, which picked to be in the cream of the producing area, was brought in as a very small well. The same is true of the southwest extension of Moffitt and associates, as proven by offset wells which have been drilled by both the Arkansas Fuel Oil Company and the Magnolia Petroleum Company to their discovery extension well, and both of which were brought in as very small producers.

Carterville

The Carterville district, of Bossier Parish, also claimed a share of interest during the past week, by the completion of a well which has all of the potential earmarks of a commercial oil producer. The Atlantic Oil Producing Company's Farrington 1, section 22-23-12, originally completed as a 34 million cubic foot gas well from 3087 feet, was deepened to 3105 feet, where it was reported that a salt water sand had been encountered. Upon being tested at this depth, however, the well began making oil by heads, and later showed for a 50 to 60 barrel producer. With one exception, this well is the deepest in the field. The Texas Company's Mays 1, section 27-23-12, several miles from the present center of activity, was recently completed at 3144 feet, flowing a small amount of oil and gas. The completion of the Atlantic's Farrington well is not unlike that of many previous completions in the Carterville district, and gives weight to the often heard remark that future exploration work will develop a commercial oil field in the Carterville district.

Pine Island

Only one new Trinity horizon well was started in the Pine Island field last week; and no interesting developments were reported from wells that are now drilling. Numerous tests are fast approaching an interesting stage, and several are due to be tested next week. The discouraging showing developed in some recent wells is thought to have had a rather disheartening effect upon the operators, and this may be partially responsible for the fact that more new wells were not started during the week.

The Palmer Corporation's Bossier Land and Livestock 1, section 9-16-11, Bossier Parish, Elm Grove gas district, is bailing at 5383 feet, where it recently tested salt water; and was later shot with 50 quarts of nitro glycerine, and bridged over. This well is the next deepest well ever drilled in this parish, the Gulf Refining Company's Willis Wiliams C-1, abandoned at 6090 feet, being the deepest. The Lochnager Oil and Gas Company has begun work on its second test in section 26-9-6e, Catahoula Parish, a few feet from their Beasley well which recently blew out at 3093 feet, making an estimated 15 million feet of gas. The well later bridged over and was abandoned, and derrick was skidded for Beasley 2. The Ohio Oil Company is reported to have leased a portion of the bed of Turkey Creek, in Franklin Parish, for a cash consideration of $1,750.00, with half of that sum to be paid as an annual rental. A total of four bids was received by the State land office, at Baton Rouge, for this creek bed.

Arkansas

The first interesting news emanating from the Arkansas territory within several weeks was reported this week when the Ohio Oil Company's Crain 2, section 1-17-14, located in the same forty acre tract as its Crain 1, now pumping at the rate of about 50 barrels of oil a day, showed indications of making a commercial well. When tested with a patented sand tester at 3020 feet recently, it is said that the well showed both oil and gas, conservatively estimated at the rate of 100 barrels of oil and five million feet of gas. The production is coming from nine feet of sand, and the oil is reported to be of high gravity, of the same grade as that being pumped from Crain 2. The Magnolia Petroleum Company is coring at 2970 feet in Carroll 1, in the same section.

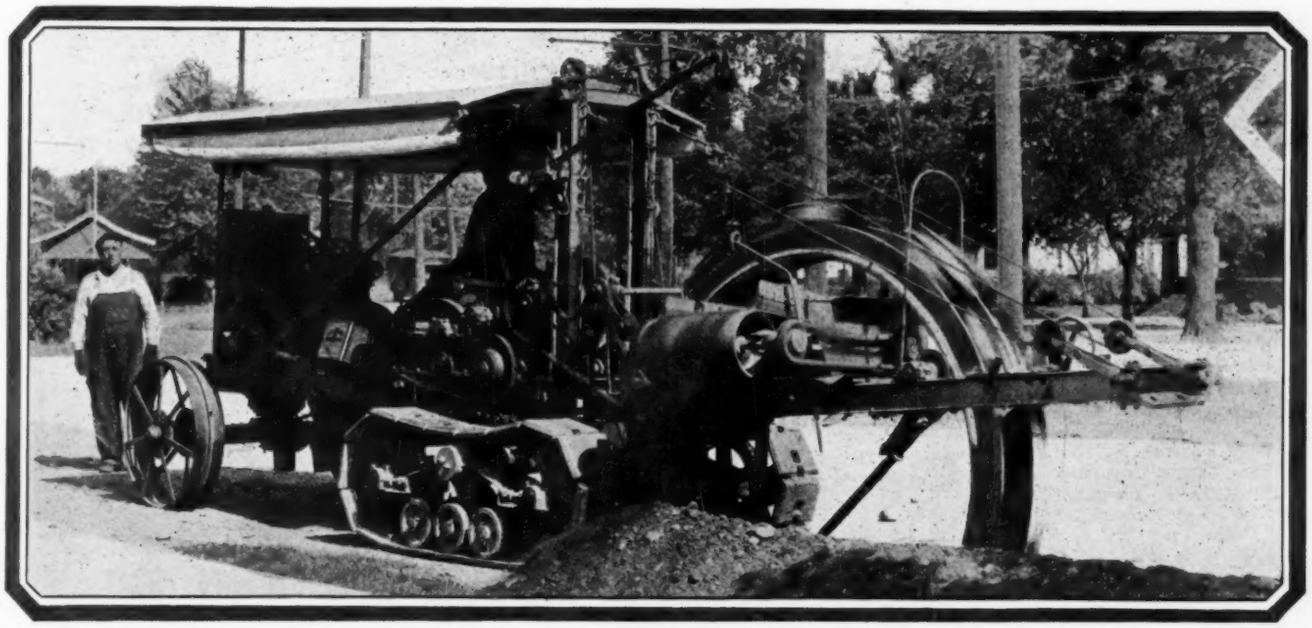
Ten Wells in Oxford Pool Making 3500 Barrels

Oxford, Kansas.—The Oxford townsite pool reached a new high mark of 3500 barrels with 10 producing wells September 8. Operators in this pool estimate that if the drilling restrictions were removed production would climb rapidly as completed wells offer indications of holding up well.

At the opening of the third week in September Roxana Petroleum Corporation had started work on seven new locations in the pool. Nevitt Block 2, Emrich Block 2, Emrich Block 3 and Community Block 4 were having derricks built while Community Blocks 4,

"Fast On Its Feet"

in moving from one job to another
A light ditcher ~ little in size, big in ability



Model 15 is the newest addition to Buckeye pipe-line ditchers which are standard gas and oil-field equipment the world over.

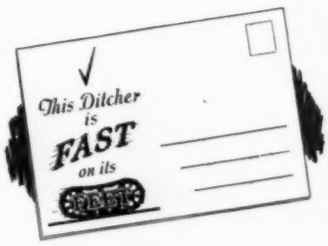
Compact and easily transported, it was developed especially for small trench excavation —for service lines of every description. It works advantageously in narrow or restricted quarters where big excavators are unsuitable. Unsurpassed speed and ease of transportation are distinguishing features.

You will marvel at its great digging ability. Proportionate to its size, Model 15 cuts little ditches just as effectively and cheaply as larger Buckeyes cut big ones.

It embodies, in improved form, the rugged construction and favorite features for which all Buckeyes are famous. Finest steels, oversize power plant, steel-tread Alligator Wheels, double-driven cutting mechanism—all assure dependability and long life.

Other Buckeyes are bigger—*no ditcher is better.*

See this popular little ditcher at the International Petroleum Exposition, Tulsa, September 24th to October 1st. Our exhibition space is lot H. You can easily see why this Model 15 is *"fast on its feet"*, both in getting work done and in moving from one job to another.



Write for this interesting bulletin. It gives general specifications and mechanical details of Model 15—*a genuine Buckeye,* and just the ditcher you may need.

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5 and 6 were rigging up, and Van Winkle Block 1 was a location.

Ray Ramsey's No. 1 in Block 24, located in the central part of the town, had 300 feet of oil and water standing in the hole from sand at 1125-30 feet, but the hole will be deepened to the Stalnaker sand at 2100 feet. Fitch et al's No. 1, Block 17, showed indications of being Oxford's next producer late in the week with the hole 2050 feet, only about 30 feet from the top of the sand.

Tom Fine's No. 1, Block 18, was drilling at 2144 feet September 15, and Billeyu et al in Block 17 were below 2150 feet. W. H. Stanley et al's Scroggins test in the southwest edge of the pool was at 823 feet, Trees Oil Company's Outlot 6 was down 240 feet. Marland's Craven 1, a mile north of the townsite, was drilling at 2505 feet and the Dobbs well, northwest of the northwest of section 36-32-2, was nearing 1950 feet.

Without a new completion during the third week in September the Churchill pool, eastern Sumner County, showed an increase of 200 barrels daily with 13,314 barrels from 50 wells. In the Slick-Carson pool southeast of Oxford, 24 wells were making 1018 barrels daily late in the past week.

West Texas Production

CRANE COUNTY

	Producing Wells	Daily Av. Prod.
Church & Fields—		
Simms Oil Co. & Atlantic Oil Prod. Co.	24	*26,240
Landreth Production Corporation	15	15,800
Eastland Oil Co. & Collett-O'Keefe	8	12,985
Humble Oil & Refining Company	11	6,990
Tidal Oil Co. & Turman-Maxwell	16	6,800
Pecos Oil Company	10	6,045
Magnolia Petroleum Company	25	3,470
Prairie Oil & Gas Company	9	*2,485
Independent Oil & Gas Company	3	2,270
Geo. Church & Bert Weekly	3	1,995
Gulf Production Company	10	1,590
Geo. Church & Bob Fields	2	275
The Texas Company	2	270
Stidham & Thrasher	1	10
Totals	139	87,225
Gulf-McElroy—		
Gulf Production Company	46	*15,750
Marland-Hughes—		
Marland Oil Company	16	780
The Texas Company	10	290
McMan Oil & Gas Company	2	65
Independent Oil & Gas Company	1	10
Totals	29	1,145
Totals for Crane County	214	104,120

UPTON COUNTY

	Producing Wells	Daily Av. Prod.
Gulf Production Company	15	3,425
Prairie Oil & Gas Company	8	3,230
Texas Pacific Coal & Oil Company	15	3,230
Roxana Petroleum Corporation	39	2,655
Marland Oil Company	78	2,640
Dixie Oil Company	36	2,555
The Texas Company	19	2,380
Humble Oil & Refining Company	9	1,420
Independent Oil & Gas Company	26	910
Amerada Petroleum Corporation	6	280
Sun Oil Company	10	245
Republic Prod. Co. & Marland Oil Co.	5	120
Wentz Oil Corporation	3	120
Tidal Oil Company	2	105
Snowden & McSweeney	1	100
Pure Oil Company	1	120
Bryant & Atlantic Oil Producing Co.	2	50
Simms Oil Company	3	45
Atlantic Oil Producing Company	1	35
Champlin Refining Company	1	25
McMan Oil & Gas Company	2	25
Texon Oil & Land Company	1	15
White Eagle Oil & Refining Company	1	15
Totals	284	23,745

REAGAN COUNTY

	Producing Wells	Daily Av. Prod.
Big Lake Oil Company	117	18,780
Texon Ol & Land Company	79	5,960
Totals	196	24,740

PECOS COUNTY

	Producing Wells	Daily Av. Prod.
Mid-Kansas & Transcontinental	12	*4,035
The California Company	1	*870
Marland Oil Company	1	*575
McMan O. & G. Co. & Marland Oil Co.	1	*545
Gulf Production Company	1	*315
Allsman-Bell et al	1	100
Red Bank Oil Company	1	*35
Totals	18	6,475

WINKLER COUNTY

	Producing Wells	Daily Av. Prod.
Southern Crude & R. A. Westbrook	2	6,305
Southern Crude Oil Purchasing Co.	3	*1,025
Pure Oil Company	1	*995
Gulf Production Company	1	*725
Murchison-Cranfill & Marland	1	*500
Independent Oil & Gas Company	1	25
Totals	9	9,575

JONES COUNTY

	Producing Wells	Daily Av. Prod.
Phillips Petroleum Company	10	950
Marland Oil Company	3	375
Mid-West Exploration Co.	4	200
Stebbins Oil & Gasoline Company	1	20
Atlantic Oil Prod. Co. & Landreth	1	5
Totals	19	1,550

MITCHELL COUNTY

	Producing Wells	Daily Av. Prod.
The California Company	95	2,655
Magnolia Petroleum Company	22	620
Atlantic Oil Producing Company	8	220
Eastland Oil Company et al	9	175
Tidal Oil Company	2	30
Fred Carey et al	1	20
Totals	137	3,720

HOWARD COUNTY

	Producing Wells	Daily Av. Prod.
Marland Oil Company	32	1,170
Magnolia Petroleum Company	32	1,040
Pure Oil Company	4	260
Lockhart & Company	7	160
Frank M. Greene Corporation	2	145
Bristow & Merrick	3	110
F-H-E Oil Company	1	60
Tidal Oil Company	3	40
Humble Oil & Refining Company	2	35
Mid-West Exploration Company	2	35
Owen-Sloan et al	1	30
Godley Oil & Gas Company	1	25
Marland & Texon Oil & Land Co.	1	25
Comet Petroleum Company	2	20
Gulf Production Company	1	15
Dixie Oil Company	1	10
Totals	94	3,180

CROCKETT COUNTY

	Producing Wells	Daily Av. Prod.
Blackwell Oil & Gas Company	1	450
Humble & Marland Oil Company	12	360
J. K. Hughes Developing Co.	5	195
Republic Production Company	2	165
Carl Cromwell et al	3	130
Gulf Production Company	6	100
Roxana Petroleum Corporation	1	15
Totals	30	1,415

GLASSCOCK COUNTY

	Producing Wells	Daily Av. Prod.
Marland Oil Co. & Texon Oil & Land Co.	2	400

SCURRY COUNTY

	Producing Wells	Daily Av. Prod.
The Northwest Company	5	50

LOVING COUNTY

	Producing Wells	Daily Av. Prod.
Lockhart & Company	2	35

ECTOR COUNTY

	Producing Wells	Daily Av. Prod.
J. S. Cosden & The Texas Company	1	15
Totals for all fields	1,011	179,020
Totals previous week	1,000	165,305

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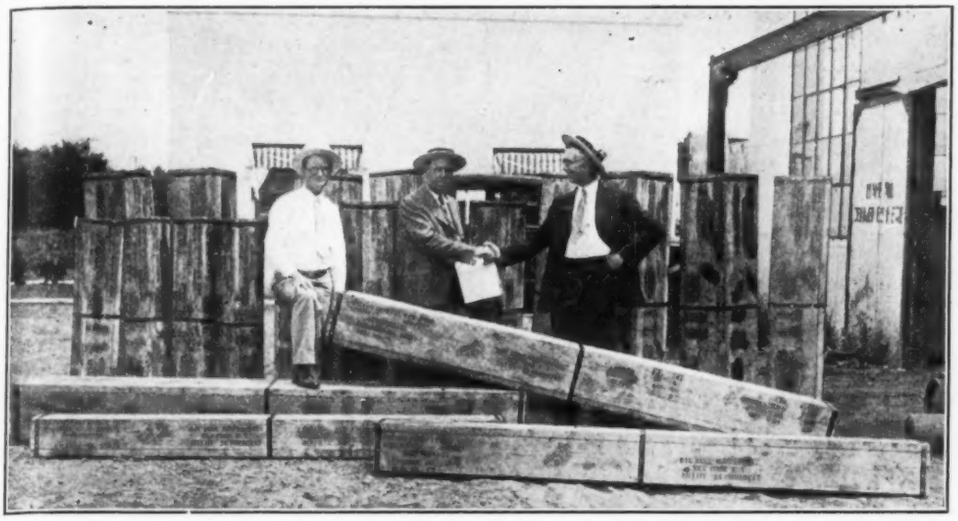
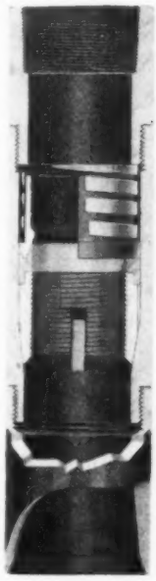
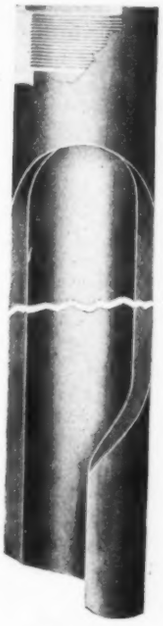


To the left. Shipment of American Overshots and oil well tools forwarded to Russia just recently. A. E. Bagley, official inspector for buyers, center. At his right, Ed Overholser, president manager of the Oklahoma City Chamber of Commerce. On the left J. F. Cailloux, president of American Iron & Machine Works, Oklahoma City.



American Overshot with Standard Guide



Wall Hook

Type E Milling Shoe Teeth on Bottom and Inside

American Overshots For Russia

THE popularity and demand for American Oil Field Tools has become international. Just a few weeks ago one of the largest shipments of American Overshots went to Russia. Others have been sent to India, South America and Venezula.

American products are demanded in all of the oil fields of the world. Their perfect performance has caused this increasing demand.

Visit your local supply company and see American Oil Field Tools. They're handled by all the leading supply companies. Descriptive literature upon request.

American Iron and Machine Works, Inc.

MANUFACTURERS OF OIL FIELD EQUIPMENT

OKLAHOMA CITY, OKLAHOMA

American Oil Field Tools

American Releasing and Circulating Overshots.
American Rock Bit Wrenches.
American Milling Shoes
American Flexible Coupling for Rock Bit.
American Steel Tool Houses.
American Forged Steel Wall Hooks.
American Rock Bit Breakout Blocks.
American Rock Bit Cone. Lubricators.
American Paraffin Bits.
American Female Die Nipples.
American Tapered Taps.
American Forged Steel Subs.
American Rotary Shoes.
American Cone Fishing Baskets.
American Steam Lubricators.
Fishing Sockets.
American Combination Reverse and Throttle Levers.
American Side Tracking Mills.
American Rock Bit Lubricator Wash Pipe Attachment.
American Rotary Milling Tools.
American Myracle Sucker Rod Sockets.

Type F Milling Shoe Teeth on Bottom and Outside

United States Daily Average Production

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

Month—	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Ave.	Gross
January, 1926	449,370	100,130	260,180	90,290	43,990	181,190	101,000	102,300	621,300	1,946,980	60,356,380
February	450,037	101,937	245,989	91,550	45,090	169,676	99,000	98,412	605,250	1,909,637	53,469,836
March	454,762	103,300	260,262	92,712	48,787	164,312	97,625	102,325	604,500	1,929,562	59,816,422
April	467,175	101,825	263,612	88,812	50,562	169,824	100,875	106,675	600,000	1,947,387	58,421,610
May	463,750	105,690	277,700	94,550	58,150	175,430	105,700	112,300	602,720	1,995,990	61,875,690
June	456,450	107,637	302,187	89,912	60,412	167,887	106,250	112,925	606,925	2,013,187	60,395,610
July	456,920	110,320	336,600	114,760	57,460	161,870	104,700	108,520	613,940	2,062,470	63,936,570
August	465,137	111,600	381,550	161,237	56,787	157,375	108,350	110,737	609,725	2,162,662	67,042,522
September	465,387	113,037	402,212	175,512	56,575	154,037	110,125	105,825	598,100	2,180,862	65,425,860
October	497,120	114,720	439,490	170,350	58,200	149,810	109,500	99,060	611,600	2,259,850	70,055,350
November	551,225	115,425	475,987	176,425	56,575	144,100	111,125	93,537	641,325	2,365,475	70,964,250
December	561,012	118,950	483,350	181,263	55,137	139,250	110,375	87,650	659,925	2,396,112	71,279,472
January 1927 . .	591,570	117,490	460,910	176,330	53,030	132,648	108,100	83,910	655,660	2,385,650	73,955,150
February.....	683,775	116,200	479,175	154,975	52,850	128,362	107,250	85,237	642,775	2,455,612	69,157,136
March.....	707,187	115,612	475,375	154,262	51,450	124,662	104,500	87,200	644,350	2,462,625	76,341,375
April.....	723,820	115,510	476,920	155,420	50,670	114,860	107,500	89,130	643,520	2,477,350	74,320,500
May.....	716.175	114,675	488,125	151,375	47,465	113,525	113,625	89,625	633,225	2,491,975	77,374,910
June	760,712	112,662	481,950	151,650	48,762	112,612	112,125	85,725	640,325	2,506,037	75,181,125
July	839,580	108,200	476,750	144,110	55,280	110,290	111,700	87,110	621,920	2,554,940	79,203,140
August	837,750	105,187	483,812	138,787	57,375	105,175	114,750	81,837	619,825	2,544,500	78,879,500
September 3	809,950	104,700	479,200	143,600	54,000	102,150	113,500	74,350	630,700	2,512,250	17,585,750
September 10 . ..	793,600	105,550	485,100	140,250	54,350	101,800	112,000	73,350	639,400	2,505,400	17,537,800
September 17	782,400	105,250	484,500	145,150	53,400	101,500	110,500	73,050	639,100	2,494,850	17,463,950
Increase	.....	.....	.....	4,900	.....	.....	.....	.....	.....	.....	.....
Decrease	11,200	300	500	.....	950	300	1,500	300	300	10,550	73,850

TEXAS

(Outside Gulf Coast)

PANHANDLE DISTRICT

	Sept. 17	Sept. 10
Hutchinson County	77,650	78,000
Gray County	9,750	9,750
Carson County	8,850	9,300
Wheeler County	1,450	1,400
Others	50	50
Totals	97,750	98,500

NORTH TEXAS

Burkburnett	12,950	13,000
Electra	12,100	12,250
Iowa Park-KMA	2,200	2,300
Wilbarger	12,000	12,200
Archer County	26,400	26,550
Clay County (Petrolia)	600	600
Baylor County	100	100
Montague and Cooke Cos.....	15,900	16,050
Totals	82,250	83,050

WEST CENTRAL TEXAS

Stephens County	8,400	8,300
Eastland-Desdemona	9,250	9,000
Brown County	24,400	24,650
Coleman County .	1,200	1,200
Callahan County	3,750	3,900
Shackelford County	5,900	6,000
Young County	10,700	10,950
Throckmorton County	1,250	1,350
Jack County	750	750
Palo Pinto County	800	800
Others	600	600
Totals	67,000	67,500

WEST TEXAS

Jones County	1,950	1,800
Mitchell-Scurry Cos.	3,800	3,750
Howard County	3,150	3,350
Reagan County	24,100	24,850
Crane-Upton Counties 128,300		128,300
Crockett County	2,100	1,350
Pecos County	7,650	6,150
Winkler County	4,700	4,850
Others	2,450	2,000
Totals 178,200		176,400

EAST CENTRAL TEXAS

Mexia	9,500	9,650
Currie	650	650
Richland	750	800
Wortham	2,900	2,650
Corsicana-Powell	15,000	14,650
Nigger Creek	1,750	2,000
Totals	30,550	30,400

SOUTHWEST TEXAS

Luling	16,000	16,300
Lytton Springs	1,700	1,750
Somerset	900	900
Laredo District	9,600	9,750
Piedras Pintas	50	50
Others	500	500
Totals	28,750	29,250
Total Texas (Outside Gulf Coast 484,500		485,100

TEXAS GULF COAST

West Columbia	8,550	8,850
Damon Mound	900	900
Big Creek	2,450	2,550
Boling	2,700	1,400
Blue Ridge	3,750	3,300
Pierce Junction	8,450	6,950
Humble	2,300	2,350
Goose Creek	8,250	8,350
South Liberty	2,750	2,800
Hull	14,200	14,400
Saratoga	900	1,000
Batson	1,550	1,300
Sour Lake	4,100	4,150
Spindle Top	59,000	56,300
Orange County	4,850	4,700
Others	4,050	4,150
Totals 128,750		123,450
Texas Total 613,250		608,550

OKLAHOMA

North Braman	3,050	3,050
South Braman	2,200	2,300
Blackwell	3,950	4,000
Hubbard	4,100	4,400
Thomas	4,200	4,450
Tonkawa	18,700	19,000
Garber	10,950	11,100
Burbank	36,150	36,450
Osage (outside Burbank)	31,050	31,200
Watchorn	1,800	1,800
Cushing	21,250	21,200
Yale-Jennings	9,700	9,800
Davenport	2,800	2,800
Bristow-Slick	25,050	25,100
North Okmulgee	16,250	16,300
Lyons-Deaner	5,050	5,100
Stroud	1,250	1,250
Cromwell	12,950	12,150
Papoose	6,500	6,400
Wewoka	13,650	13,850
Seminole 264,750		272,200
Earlsboro 161,700		164,950
Duncan District	7,000	6,950
Graham	6,750	6,750
Fox	1,900	1,900
Healdton	15,000	15,000
Hewitt	9,650	9,600
Scholem Alechem	16,450	16,350
Others	68,600	68,200
Totals 782,400		793,600

CALIFORNIA

Santa Fe Springs	39,000	40,500
Long Beach	91,000	91,000
Huntington Beach	67,000	68,000
Torrance	21,500	21,500
Dominguez	15,000	15,000
Rosecrans	8,000	8,000
Inglewood	33,000	33,500
Midway-Sunset	84,000	84,000
Ventura Avenue	58,100	57,900
Seal Beach	67,500	65,000
Others 155,000		155,000
Totals 639,100		639,400

ARKANSAS

El Dorado	5,950	5,650
Smackover Light	10,100	10,300
Smackover Heavy	78,450	78,800
Stephens	1,200	1,200
Nevada	2,700	2,550
Lisbon	3,000	3,200
Others	100	100
Totals	101,500	101,800

KANSAS

	Sept. 17	Sept. 10
Greenwood County	33,250	33,450
Florence-Covert	1,650	1,600
Peabody-Ebling	3,850	3,900
Eldorado-Towanda	14,100	14,050
Augusta-Fox Bush	4,300	4,250
Rainbow Bend	2,200	2,200
Russell	2,500	2,500
Churchill	13,750	14,100
Others	29,700	29,500
Totals 105,250		105,550

NORTH LOUISIANA

Homer	4,700	4,700
Haynesville	7,050	7,100
Caddo Light	13,700	14,950
Caddo Heavy	5,100	5,350
DeSoto-Red River	4,000	4,100
Elm Grove	650	700
Bellevue	1,150	1,250
Cotton Valley	5,350	5,350
Urania	10,150	10,200
Pleasant Hill	1,550	650
Totals North Louisiana	53,400	54,350

LOUISIANA GULF COAST

Vinton	4,950	5,050
Lockport	6,000	6,250
Evangeline	1,200	1,200
Edgerly	2,450	2,350
Others	1,800	1,950
Total Louisiana Gulf Coast.	16,400	16,800
Louisiana Total	69,800	71,150

MOUNTAIN STATES

WYOMING

Salt Creek	32,850	33,400
Grass Creek	2,650	2,550
Elk Basin	1,000	1,000
Big Muddy	3,000	2,800
Lost Soldier	2,850	2,800
Rock River	2,750	2,200
Lance Creek	650	650
Teapot Dome	750	550
Others	3,550	4,500
Totals	50,050	50,450

MONTANA

Cat Creek	2,100	2,100
Sunburst	11,500	10,000
Others	200	250
Totals	13,800	12,350

COLORADO

Moffats (Craig)	1,650	1,500
Fort Collins	2,750	3,950
Florence	950	900
Others	1,300	1,500
Totals	6,650	7,900

NEW MEXICO

Table Mesa	250	250
Artesia	1,300	1,450
Hogback	700	650
Rattlesnake	300	300
Totals	2,550	2,650
Totals Mountain States	73,050	73,350

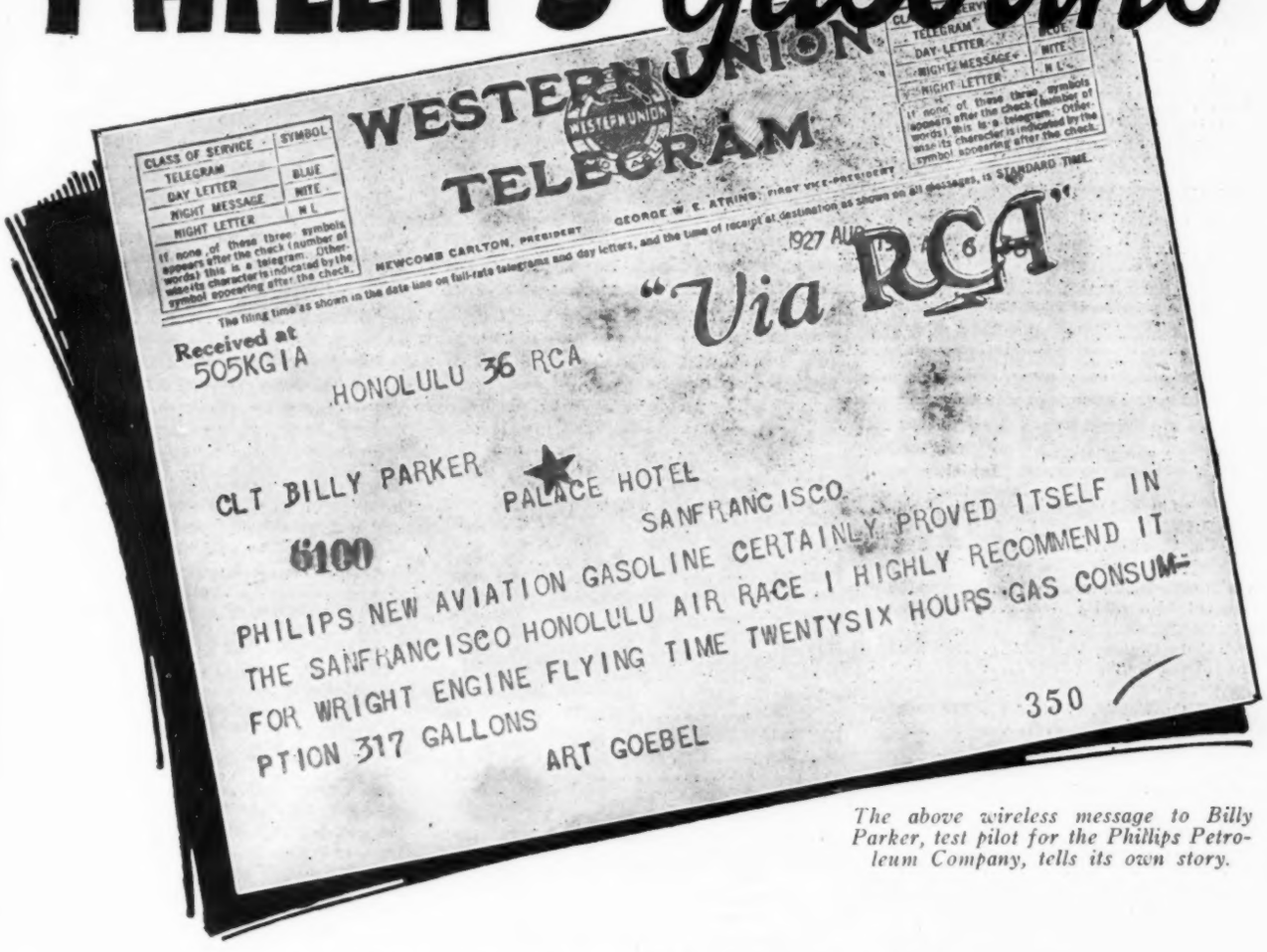
EASTERN STATES

(Including Ill., Ind., Ohio, W. Va., Pa., Ky., and N. Y.) ..110,500		112,000

PRODUCTION SUMMARY

East of Rockies 1,782,700		1,792,650
United States	2,494,850	2,505,400

ART GOEBEL WON WITH PHILLIPS *Gasoline*



The above wireless message to Billy Parker, test pilot for the Phillips Petroleum Company, tells its own story.

The high quality and absolute dependability of the PHILLIPS Aviation Gasoline used by Art Goebel in his victorious flight in the "Woolaroc" from San Francisco to Honolulu is characteristic of all Phillips natural gasoline products.

PHILLIPS PETROLEUM COMPANY
Bartlesville, Oklahoma

PHILLIPS

Aviation Gasoline

Say you saw it in The OIL WEEKLY

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

SUMMARIZED REVIEW OF FIELD RESULTS

State—	Completions This Week	Completions Last Week	Producers This Week	Producers Last Week	Gas Wells This Week	Gas Wells Last Week	Failures This Week	Failures Last Week	Initial Production This Week	Initial Production Last Week
Arkansas	4	4	2	2	..	..	2	2	155	300
California	19	19	17	16	..	..	2	3	14,465	11,600
Colorado	..	..	..	..	..	..	..	..	....	....
Indiana	2	4	..	2	..	1	2	1	....	42
Illinois	4	3	2	1	1	..	1	2	40	15
Kansas	21	20	12	6	..	3	9	11	2,730	240
Kentucky	19	10	14	4	..	1	5	5	1,161	250
Louisiana	17	21	3	5	4	4	10	12	267	2,216
Michigan	5	5	5	5	..	..	..	..	45	92
Montana	..	6	..	4	..	2	..	..	....	230
New Hexico	..	..	..	..	..	..	..	..	....	....
New York	20	19	19	17	1	..	..	2	76	201
Ohio	14	27	12	9	1	13	1	5	374	260
Oklahoma	95	93	48	37	10	14	37	42	63,976	24,051
Pennsylvania	78	78	69	68	7	9	2	1	267	434
Tennessee	3	..	2	..	..	..	1	..	335	....
Texas	96	96	55	54	11	6	30	36	34,966	28,092
West Virginia	19	25	3	8	10	13	6	4	16	50
Wyoming	..	9	..	3	..	3	..	3	....	353
Totals	416	439	263	241	45	69	108	129	118,873	68,426
Increase this week	..	..	22	..	..	..	..	..	50,447	....
Decrease this week	23	..	..	..	24	..	21	..	....	....

NOTE—Following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million cubic feet of gas; abn—abandoned; bbls—barrels; b. s.—basic sediment; csg—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

CALIFORNIA

Completions

Company, Well and Location	Initial Production Bbls.	Depth
BREA-OLINDA—		
Shell Oil Co. Pico 5	75	5520
HUNTINGTON BEACH—		
Beeson & Hoye's Huntington 1	100	2100
Standard Oil Co., Bolsa 30	¶5-80	3590
KERN FRONT—		
George F. Getty Lenhart 19, 14-28-27	175	2142
Standard Oil Co. No. 9, 27-28-27	275	2465
MIDWAY—		
Standard Oil Co. No. 44, 29-31-24	150	4605
No. 70, 17-32-24	50	3605
RICHFIELD—		
George W. Johnson Swain 1	*	4750
Standard Oil Co. Son-Crail-Lock 1	160	3120
SEAL BEACH—		
California Petroleum Corp. Alamitos 5, wo	500	5304
George F. Getty No. 3, wo	1200	....
No. 5, wo	2250	....
No. 7, wo	1000	....
Paul Getty Fee 2, wo	2800	....
Marland Oil Co. Selover 10, wo	2000	5360
Petroleum Securities Co. Naples 3, wo	2600	....
Universal Oil Co. Wolf 1, wo	1000	5361
SUNSET—		
Union Oil Co. WK 1, 10-11-23	50	5305

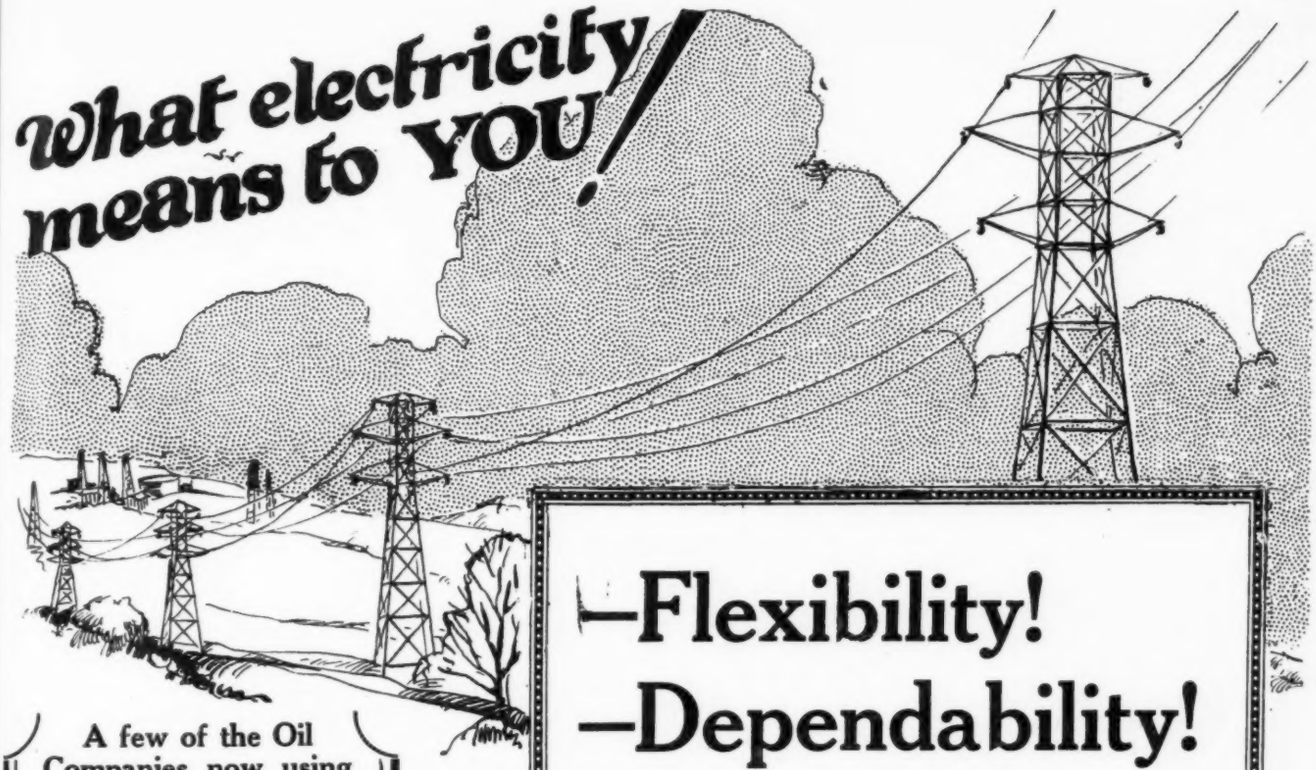
OKLAHOMA

Company, Well and Location	Initial Production Bbls.	Depth
CREEK COUNTY—		
Pure Oil Co. Kernel 6, nw c se ne, 30-14-8.	80	3541
Cumberland Oil Co. Tiger 6, se ne se, 13-17-10	¶2	2572
Kennedy, Horner et al, Strip 1, nw c sw se se, 13-17-10	180	2439
Transcontinental Oil Co Freeman 2, ne se sw, 14-17-8	*	3245
C. G. Tibbens, Callahan 1, ne se se, 21-15-8	*	3296
Barnsdall, Sneed 1, ne nw nw, 20-18-9	*	3320
Haddock et al, Perryman 1, nw ne se, 8-17-9	*	3305
Ted Ray Oil Co., Brink 2, sw c se se se sw, 13-17-10	*	2125
Pioneer Pet. Co., Self 1, cnl sw ne, 21-17-10	*	2996
Wolfe Oil Co., Turnham 1, sw se ne, 6-19-9	*	3120
C. G. Tibbens, Unallotted 37, cwl e½ se nw, 30-15-9	*	3704
GARFIELD COUNTY—		
Sinclair, North Walker 75, ne c sw ne, 13-22-4	¶3	845
Chas. E. Knox, Crooks 5, se c sw ne, 26-22-4	165	1760
GRADY COUNTY—		
Magnolia, Edwards 1, se c nw, 1-5-10	20	2097
Skervin-Farwell, sw nw se, 23-5-8	¶29	2300
Carter, Mecklenberg 1, se c, 6-3-5	240	1983
Carter-Creans 4, ne c se, 21-3-5	550	1712
Nothalff, sw c nw, 23-3-5	80	1707
Noble & Westerfield, Smith 1, nw c, 24-5-8	*	2227
KAY COUNTY—		
H. A. G. Oil Co., Binney 2, se c sw, 21-27-1	*	2545
Blackwell O. & G. Co., Denton 1, c se se, 6-21-1	*	440
KINGFISHER COUNTY—		
Bu Vi Bar Pet. Co., Kelly 1, sw se sw, 16-19-5	*	6210
LINCOLN COUNTY—		
Magnolia, Benedict 2, ne se nw, 7-14-4	75	3392
Mid-Continent, Strip 1, sw c se, 13-12-6	*	4708
LOGAN COUNTY—		
Roxana, McCully 1, sw ne se 30-19-4	2500	5985
MUSKOGEE COUNTY—		
Wilson & Severt, J. Barnett 6, e se se 34-16-15	¶1	1095
Link Oil Co., E. Jefferson 2, nw c ne se 32-15-15	*	2565
OKFUSKEE COUNTY—		
Riverland Oil Co., H. Barnett 1, ne c sw 33-11-11	*	3788
J. M. Kessler, Harjo 1, se c nw se, 18-12-11	*	3640
OKMULGEE COUNTY—		
F. D. Misener, R. Carter 2, cwl sw ne 10-15-14	15	992
Sheldon Oil Co. et al, Skelton 1, c sw se 15-13-12	90	2882
Eagle Pitcher Lead Co., Holmes 4, cwl ne sw 34-12-12	¶2	1953
OSAGE COUNTY—		
Winona Oil Co., No. 1, nw c, 17-29-11	8	1110
Phillips Pet Co., No. 1, sw nw se, 17-27-6	250	2968
Kanupp et al, No. 12, csl se, 35-27-11	10	1049
Pawhuska O. & G. Co., No. 43, se c sw, 34-26-9	¶1¼	1080
I. T. I. O., No. 371, sw se se, 20-23-8	¶1	1317
Superior Oil Corp., No. 3, c s l n½ nw, 20-23-10	*	2430
PAWNEE COUNTY—		
Superior Oil Corp., No. 1A, se nw ne, 20-21-7	¶2	2524
PONTOTOC COUNTY—		
Homa Okla., Crumley 1, se ne se, 17-5-8	215	2487
W. R. Ramsey, Milner 1, se nw sw, 17-5-8	¶50	2333
Webb 1, ne c se, 20-5-8	710	2512
American O. & Ref. Co., Stringer 1, sw c se 28-5-6	*	3300
POTTAWATOMIE COUNTY—		
Shaffer, Killing 1, ne c se, 24-7-3	30	3993
Phillips 2, nw c sw, 19-7-4	65	3924
Magnolia, L. Hathcock 1, ne c sw, 11-7-4	210	3870
Cowden 1, se ne sw, 4-9-5	25	4475
Phillips, Wilson 1, ne se se, 24-7-3	*	....
Pure, Doyle 3, nw c, 30-7-4	*	....
Magnolia, Davis 1, nw c ne, 30-7-4	*	4273
Magnolia, et al, Talley 2, nw sw nw, 19-7-4	*	....
Philmac & Marland, Dobbs 2, ne c se, 8-9-5	*	4411
Barnsdall, Holey 1, se nw se, 4-9-5	*	4306
SEMINOLE COUNTY—		
I. T. I. O., Nitey 1, ne c, 2-7-6	4830	4151
House 1, sw nw nw, 1-7-6	7025	4149
Dungan 1, se sw se, 35-8-6	4266	4221
Magnolia, Boren 1, nw ne nw, 2-8-6	157	4214
Edmundson 3, se sw sw, 3-9-5	3136	4261
Bryant 3, ne se nw, 9-9-5	275	4352
Sinclair, Cumsey 1, sw c ne, 10-8-6	850	4203
Ellen 2, se nw sw, 11-8-6	800	4182
Hollins 1, sw ne nw, 12-9-5	2905	4238
Barnsdall, Murrow 2, nw sw sw, 11-8-6	690	4235
Henry 1, se sw sw, 14-9-6	150	4616
Pack 1A, ne se se, 10-9-5	1920	4349
Carter, Bowlegs 4, se c sw, 15-8-6	1435	4323
Creamer 3, ne sw se, 34-9-6	60	4250
W. Cudjo 2, ne se sw, 34-9-6	40	4280
Strothers 3, se ne se, 34-9-6	55	4095
Simpson 3, nw sw sw, 35-9-6	10	4350
Blackwell O. & G. Co., Nitey 1, se c, 35-8-6	4664	4232
Nitey 2, sw se se, 35-8-6	3792	4195
Shaffer O. & Ref. Co., Jones 10, se sw nw, 32-8-8	237	4040
Dixie, I. Walker 4, sw ne nw, 32-8-8	50	4187
Pure, Aldridge 4, nw ne sw, 3-9-6	105	4485
Indep. O. & G. Co., Sullivan 2, nw se ne, 10-9-5	2892	4340
Gypsy, Peter 4, sw sw, 10-9-5	1095	4415
Bruner 1, nw c ne, 10-9-5	4080	4278
Amerada, Roger 2, se c, 3-9-5	4700	4280
Roger 1, sw se se, 3-9-5	4665	4265
The Texas Co., Reed 8, sw nw ne, 14-8-5	*	4444
Empire G. & F. Co., Wise 1, nw se nw 23-8-5	*	4525
Magnolia, Davis 1, sw c se, 13-8-6	*	....
Wentz Oil Corp., Lamony 1, sw nw ne, 21-8-7	*	4382
Gypsy, T. Cudjo 6, se nw se, 34-9-6	*	4364
T. B. Slick, Franks 6, se nw ne, 35-9-6	*	4100
Gypsy, Roger 1, sw se se, 21-9-7	*	3384
Island 1, se sw se, 21-9-7	3614	3614
Barnsdall, Talsey 1, sw se nw, 15-9-5	*	1745
Sebolka 2, sw ne nw, 15-9-5	*	....
Magnolia, Simpson 5, se nw se, 10-9-5	*	1590
Barnsdall, Tulsey 2, nw se nw, 15-9-5	*	4375
Gypsy, Peter 1, sw c, 10-9-5	*	4435
STEPHENS COUNTY—		
Magnolia, Johnson 4, sw ne ne, 24-1-9	*	2170
TULSA COUNTY—		
L. C. Butler, Billy 1, nw c se se	¶1	1420

KANSAS

Company, Well and Location	Initial Production Bbls.	Depth
BUTLER COUNTY—		
Paul & Nuttle, Dillenbeck "A", se c ne se, 35-25-4	*	....

What electricity means to YOU!



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—Trent Oil Field.
—Humble Power, Kilgore.
—Acme Pipe Machine Co., Albany.
—Marland Pipe Line Station, Albany.
—Texas Company Power, Blake Pool.
—Humble Pipe Line Station, Pioneer.
—San Angelo Refining Co.
—Spany & Co., Machine Shop, Cisco.
—Amerada Corp. Power, Burkett.
—Acme Tool Co., Cross Plains.
—Western Carbon Black Co., Pioneer.
—Phillips Loading Rack and Recovery, Sedwick.

WEST TEXAS UTILITIES COMPANY
ABILENE, TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
COWLEY COUNTY—		
The Texas Co., Hettle 2, se c nw se, 21-31-4	140	2417
Roth & Faurot, Shuel 1, lot 4, blk 28, City of Winfield, 22-32-4	75	2359
Roth & Faurot, Cavitt 1, blk 14, College Addition, City of Winfield, 22-32-4	15	2364
Pyle & Sutter, Hutton 1, sw c nw, 15-35-4	*	1870
GREENWOOD COUNTY—		
Roxana, Hood 2, sw c se, 14-22-11	50	1896
Darby Pet. Co., Fankhouser 2, ne c se sw, 24-22-12	50	1688
Empire G. & F. Co., Demler 2, ne c nw ne, 25-22-12	600	1734
Davis, Hazlett et al, Perkins 1, sw c nw nw, 12-22-12	*	2275
Bisagno et al, Lane 1, se c ne, 9-25-13	*	1620
LYON COUNTY—		
Transcontinental Oil Co., Atyeo 10 "A", sw nw nw, 31-21-10	*	2304
RENO COUNTY—		
Marland, Griffith 1, se c nw, 4-26-4	*	4348
SEDGEWICK COUNTY—		
Marland, Schmidt 1, sw c nw sw, 5-28-1	*	3910
SUMNER COUNTY—		
Noble et al, Oxford 1, lot 15, blk 33, City of Oxford, 11-32-2	300	2153
Ramsey et al, Oxford 1, lot 7, blk 87, City of Oxford, 14-32-2	400	2117
Roxana, Fritz 1, blk 87, City of Oxford 14-32-2	300	2116
Fritz 1, blk 88, City of Oxford, 14-32-2	200	2112
Nevitt 1, Tract 3, City of Oxford, 14-32-2	200	2089
Buffington 1, Midland RR right-of-way City of Oxford, 14-32-2	400	2103
SUMNER COUNTY—		
Moore et al, Hunter 1, lot 7, blk 72, City of Oxford, 14-32-2	*	2213
Homa Wood Oil Co., Fulcher 1, se c ne, 15-34-1	*	4185

EASTERN STATES

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
BRADFORD FIELD—		
South Penn Oil Co., Fee 34	5	....
Fee 113	2	....
Fee 114	2	....
Bingham 88, tr. 14	5	....
Enterprise 55	2	....
Lot 5, tr. 48	2	....
Davis 30	2	....
Blair 37	2	....
Melvin 292	2	....
Melvin 293	2	....
Forest Pet. Corp., Taylor 1-C17	3	....
Drake 1-G18	7	....
Drake 1-G22	8	....
Drake 1-G34	7	....
Drake 1-H13	7	....
Drake 1-H14	8	....
Drake 1-H7	3	....
Drake 1-H33	3	....
Drake 177	5	....
Drake 179	4	....
Hazlewood Oil Co., blk 21, tr. 76	2	....
Blk 25, tr. 18	2	....
Blk. 26, tr. 136	2	....
Dunlavey, Curtis & Co., Dunlavey 5	5	....
Dunlavey 6	7	....
T. P. Thompson & Co., Franchot 16	7	....
C. S. Knobb, Trustee, Griffith & Co. 1	7	....
Coit Estate, Boyd 1	3	....
Carson & Whitehead, Boyd 3	3	....
J. W. Kaufman, Rounds 8	15	....
J. E. Carl & Co., Hamlin 1	8	....
Cora M. Simons, Corwin 3	3	....
Davis Oil Corp., Kuhn 1	4	....
F. M. Boochs, Boochs 4	3	....
T. B. Wilson, Borden 18	4	....
Fitzgibbons & Wilson, Wilson 16	3	....
G. W. Crooks Estate, Crooks 1	3	....
J. A. Hooper, Bingham 432, tr. 11	3	....
Premier Oil Co., Lawton 29	3	....
D. W. Daly, Bingham 389, tr. 49	3	....
Bovaird & Parks, Bingham 540, tr 44	3	....
T. H. Kennedy, Kennedy 6	3	....
Pressure Oil Co., Howard 7	4	....
Korner & Devlin, Chamberlain 3	3	....
Phoenix Oil Co., Kane 1	*	....
Kahle Oil Co., Norton 1	4	....
C. E. Potter, Irvine 8	3	....
Hope Oil Co., Richardson 5	3	....
VENANGO COUNTY—		
Surety Oil Co., Sims 4	3	....
E. A. Bream & Co., Hunter 11	3	....
Southern Oil Co., Hindekooper 38	4	....
W. P. Highfield, Penn Railroad 3	2	....
R. S. Dickson & Co., Reid 16	2	....
Pittsburg Oil Co., Best 2	2	....
George H. Torrey, Cox 11	2	....
Lamberton Nat'l. Bank, Wilson 20	2	....
BUTLER COUNTY—		
George Say, Say 2	¶1¼	....
M. B. Cypher, Leobold 2	¶1¼	....
M. W. Graham & Co., Campbell 10	3	....
Elliott-Dufford Co., Boggs 2	8	....
M. Dunlap, Datt Hrs. 1	3	....
Knox & Son, Knox 1	2	....
McCann & Co., Wilson 1	3	....
CLARION COUNTY—		
H. F. Kenemuth, Kenemuth 1	2	....
Exley Bros., Exley 1	2	....
Hook, Sheffer & Co., Williams 4	3	....
J. Banner & Co., Banner 3	2	....
CENTER-MIDDLE FIELD—		
S. M. Bemis, Miller 4	2	....
F. A. Keller, Foster 9	2	....
McCool Bros., Smith 1	2	....
D. Wade, Cemetery Lot 1	2	....
GREENE COUNTY—		
J. B. Orndorff & Co., Rice 1	¶2	....
Martin Gas Co., Jarrett Fox 1	20	....
Ross Conklin & Co., Hampson 1	*	....
Chas. Fox Gas Co., Unknown tr. 1	¶2¼	3009
Johnson & Eddy, Jones 1	¶1½	....
Peoples Natural Gas Co., Huck 1	¶2½	3374
WASHINGTON COUNTY—		
Waco Fuel Co., McNary 1	¶1½	....

NEW YORK

Company, Well and Location	Initial Production Bbls.	Depth
ALLEGANY COUNTY—		
Forest Oil Corp., Fee 328	12	....
Fee 336	25	....
H. C. Miller & Co., Galletts 1	2	....
Galletts 2	2	....
McKean Nat. Gas Co., Lamphere 5	¶½	....
W. L. Dunning & Co., Dunning 1	3	....
M. J. Crowley & Co., Coast & Co. 8	3	....
A. M. McDonald Hrs., McDonald 3	3	....
Howard & Phillips, Howard & Co. 1	3	....
L. E. Perry & Co., Perry 4	3	....
Herrick & Co., Herrick 1	2	....
E. H. Bradley & Son, Bradley 1	2	....
R. J. Dermitt, Wetherby 1	2	....
Kinley Producers Co., Kinley 1	2	....
M. C. Oil Co., Carls 1	2	....
Carls 2	2	....
L. V. Forness & Co., Forness 1	2	....
Scott & Barnes, Scott 1	2	....
Hazlewood Oil Co., Blk 64, tr. 1	2	....
J. B. Gray, Smith & Gray 1	2	....

WEST VIRGINIA

Company, Well and Location	Initial Production Bbls.	Depth
PLEASANTS COUNTY—		
Dinsmore & Co., Severn 1	3	....
Dr. Conley, Hickel 1	*	....
P. A. Nee & Co., Ingram 1	*	....
DODDRIDGE COUNTY—		
American Oil Dev. Co., Reed 2	¶½	....
Godfrey L. Cabot, McDonald 1	¶½	....
Clifton O. & G. Co., Smith 1	*	2573
KANAWHA COUNTY—		
H. S. Hall, Trustee, Newhorn 1	10	....
Clendenning Dev. Co., Blackwell 1	*	....
CLAY COUNTY—		
United Fuel Gas Co., Summers 1	¶¼	....
Spencer 1	¶¼	....
RITCHIE COUNTY—		
Carnegie Natural Gas Co., Wilson 6	¶1	....
Cairo O. & G. Co., Boggess 1	¶1	....
CALHOUN COUNTY—		
Martin Crowley, Hainer 1	¶2	....
Calhoun O. & G. Co., Starcher 1	*	2833
ROANE COUNTY—		
Godfrey L. Cabot, Smith 1	3	....
MINGO COUNTY—		
Public Gas Corp., Logan Cannel Coal Co. 7	¶1½	....
GILMER COUNTY—		
South Penn Oil Co., Eldson 1	¶4	....
LEWIS COUNTY—		
Standard Gas Co., Allman 1	¶2	....
HARRISON COUNTY—		
Conservative Gas Co., Unknown 1	*	....

KENTUCKY

Company, Well and Location	Initial Production Bbls.	Depth
OHIO COUNTY—		
Creek Drilling Co., Lake 6	200	684
Lake 7	250	711
EASTERN STATES	COMPS	
Wood Oil Co., Elmore 13	100	675
Elmore 14	120	668
The Ohio Oil Co., Ellis 10	20	673
Daugherty & Co., Wells 2	225	685
White Plains O. & G. Co., Ellis 7	35	700
Earl Patton, Wilson 2	50	446
The Ohio Oil Co., Phillips 1	20	....
The Ohio Oil Co., Rhodes 1	10	....
Pampas Oil Co., Wade 1	*	657
Bolling & Co., Chapman 1	*	787
J. T. Griffith, Graham 1	*	....
A. J. Davis & Co., H. O. Duke 1	*	515
Highland & Smith, Midkiff 1	*	631
DAVIESS COUNTY—		
Pet. Exploration Co., Coomes 3	105	....
Leeper Oil Co., Barnett 1	5	....
BARREN COUNTY—		
Hunt, Leach & Co., Taylor 24	20	....
WARREN COUNTY—		
Onsel-Hanrahan Oil Co., Davenport 8	1	1050

TENNESSEE

Company, Well and Location	Initial Production Bbls.	Depth
CLAY COUNTY—		
Ava O. & G. Co., Williams 4	260	....
The Ohio Oil Co., Pennington 2	75	....
OVERTON COUNTY—		
The Ohio Oil Co., Sullivan 1	*	....

CENTRAL OHIO

Company, Well and Location	Initial Production Bbls.	Depth
HOCKING COUNTY—		
West Snyder & Co., Guess 1	50	....
Golden Rod O. & G. Co., Hatzel 3	125	....
Kachelmacher Estate, Mitchell 1	20	....
Sweazy & Co., Woods 1	*	....
MEIGS COUNTY—		
Sumner O. & G. Co., Roush 4	¶½	....
Brewer Farm Oil Co., Brewer 3	12	....
Ohio Fuel Supply Co., W. E. Peoples 1	*	....
LICKING COUNTY—		
Wehrle Interests, Smith 8	2	....
Vance 8	2	....
Ralph Bros., Boy Scouts Land 10	5	....
PERRY COUNTY—		
C. C. Hilliard & Co., Barnes 3	70	2950
William Cline & Co., Timmins Coal Co. 2	80	....
MEDINA COUNTY—		
E. D. Edson & Son Co., Wert 26	1	385
Oko O. & G. Co., Watson & Sandford 25	2	344

SOUTHEASTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
WASHINGTON COUNTY—		
Ben Hood & Co., Hood 2	5	....

INDIANA

Company, Well and Location	Initial Production Bbls.	Depth
GIBSON COUNTY—		
Henry Skidmore & Co., Williams 3	*	1585
DAVIESS COUNTY—		
Peak Oil Co., Ragsdale Hrs. 1	*	1495

ILLINOIS

Company, Well and Location	Initial Production Bbls.	Depth
CRAWFORD COUNTY—		
Abbott & Co., Dunlap Hrs. 1	¶¼	....
L. C. McDowell & Co., Monarch School tr. 1	2	....
LAWRENCE COUNTY—		
The Ohio Oil Co., Gillespie 22	38	1750
WABASH COUNTY—		
Wabash Oil Co., Stillwell 6	*	1578

MICHIGAN

Company, Well and Location	Initial Production Bbls.	Depth
SAGNIAW COUNTY—		
Haggel Lease Co., Hugel 2	5	1861
The Sun Oil Co., Voight 4	5	1863
Sagniaw Prospecting Co., Plavas 2	15	1841
Boehner 1	10	1846
Boehner 1	10	1863

ARKANSAS

Company, Well and Location	Initial Production Bbls.	Depth
NEVADA COUNTY—		
J. J. O'Brien, Moss B-4, 1-14-21	150	1157
OUACHITA COUNTY—		
J. E. Crosby, Berry 15, 33-15-15	5	2367

LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
BOSSIER PARISH—		
Doern et al, Thomas 1, 9-22-11	5	3046
Magnolia, Rogers 1, 21-23-12	¶15	3088
Woodley & Collins-Atlantic Oil Prod. Co., Matlock 1, 23-23-12	¶26	3071
CADDO PARISH—		
Gulf, Tyson 14, 14-21-15	212	3760
Standard, Stiles 188, 33-21-16	50	1844
RICHLAND PARISH—		
Gulf, Ouachita Natl. Bank 1, 25-17-5e	¶20	2455
WEBSTER PARISH—		
Woodley Pet. Co., Cox B-1, 23-21-10	¶4	4310

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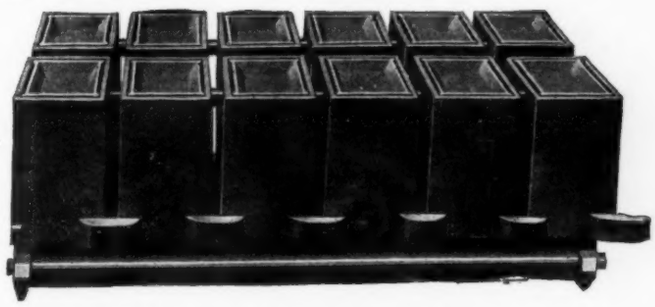

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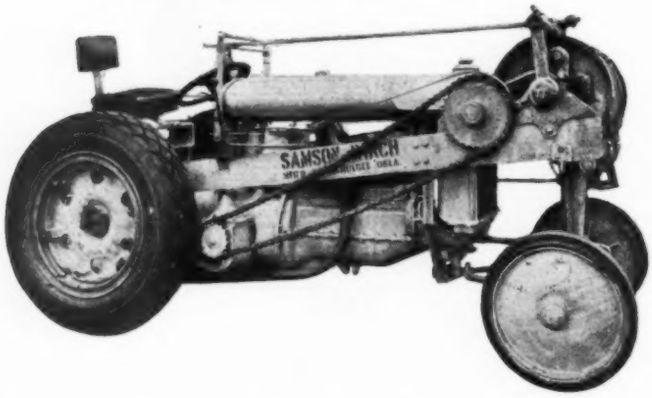

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Navarro Oil Co., Robinson B-2..... ¶ 3650
J. S. Abercrombie & Co., West Schenck 3 ..... 370 3800
Cunningham Prod. Co., Blakely et al 900 2800

BIG CREEK—
Gulf, Davis 42 ..... 169 3800
The Texas Co., Wheat 2.....2080 3000

PIERCE JUNCTION—
Rio Bravo, Settegast 8 .....1500 4300
Anderson & Plummer, Whitehead 1..1500 4500
Leonard Pet. Co., Gilmore 1.....1680 4625

ORANGE—
Texhoma Oil Co., Chesson 16..... * 3350

EAST TEXAS

HARRISON COUNTY—
J. R. Bahan, Furrh 1, J. Short sur.. ¶4 1003

PANOLA COUNTY—
Magnolia, Steele 10, B. C. Jordan sur ¶2 2294

SOUTHWEST TEXAS

DALE—
Murchison-Roxana, Copeland 1..... * 2652
Sun, Tally 2 ..... 30 2247
The Texas Co., Beaty A-2 ..... 600 2026
Texas-Humble, Clingingsmith 2....2400 2089

JIM HOGG COUNTY—
Magnolia, Merchants State Bank 27 15 1238

TEXAS PANHANDLE

CARSON COUNTY—
Empire G. & F. Co., Burnett 1.... ¶33 2417
Burnett 7 ..... ¶45 2404

GRAY COUNTY—
Empire G. & F. Co., Cubine 1, shot ¶9 3505
Gulf, Bowers 1-A 1950 3003
Roxana, Worley 4 ..... 150 3090
Sun, Worley-Reynolds 5..... 10 3320

HUTCHINSON COUNTY—
Berryman et al, J. M. Sanford 1.... ¶70 3102
Diamond Oil Co., Cockrell 1, shot.. 50 3137

POTTER COUNTY—
Amarillo Oil Co., Masterson 2-J.... ¶8 2380

WHEELER COUNTY—
E. L. Woodley et al, Fee 1..... * 2382

CENTRAL WEST TEXAS

BROWN COUNTY—
Advance Oil Co., Hart 2 .....¶1½ 1595
Anderson & Simms, Thomason 1.... * 1305
Beale et al, Thomason 1 ..... * 1604
Cates Bros. et al, Snipes 1..... * 1560
Cranfill-Reynolds and Sun Oil Co., Smith 7 ..... 200 1339
Golden Rod Oil Co., King 1..... * 1325
Kone Prod. Co., Hickman 5 ..... * 1280
Lightfoot et al, Cleveland 1..... 5 1675
Moore Oil Corp., Teague 2 ..... 45 1265
Phillips, Newsome 2 ..... 600 1335
Rex-Pyramid Oil Co., Smith 1..... * 1399
Roxana, Smith 6 ..... 900 1327
Smith 7 ..... 190 1330
Smith 10 ..... 375 1346
Smith 12 ..... 475 1337
Smith 13 ..... 70 1356

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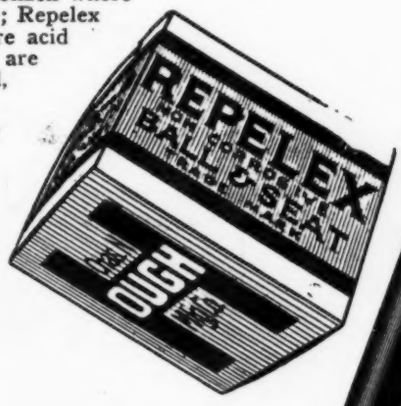

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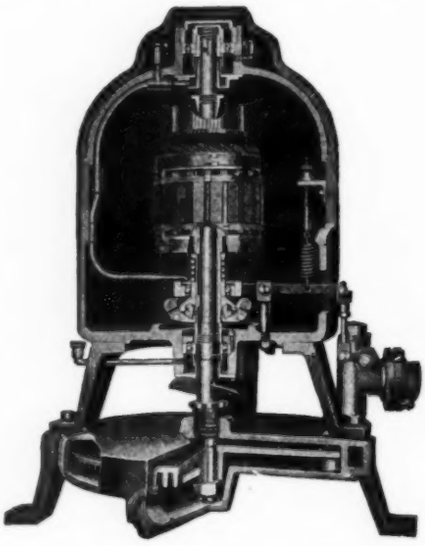

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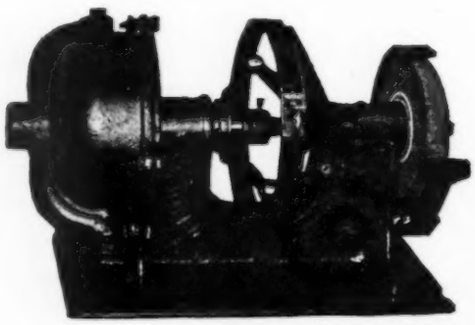

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Driven by steam or air, has a governor that drives the grinder wheel at a safe speed. Grinds your tools and does not burn them.

Manufactured by

R. F. ELECTRICAL MFG. CO.
Augusta, Kansas

Sold by

BECKER SPECIALTY COMPANY, Tulsa, Okla.

Schaffner et al, Henson 5	15		1288
Smith Oil Co., Smith 2	500		1340
Smith 3	55		1350
Smith 4	700		1355
Sinclair, Smith 1	7		1682
Wilson & Vandiner, Eads 1		*	1502
CALLAHAN COUNTY—			
Shadbolt & Creighton, Berry 1		*	1110
COMANCHE COUNTY—			
Moore et al, Lester 1		*	1500
COLEMAN COUNTY—			
Choate et al, Stewart 1		*	1240
Douglas Drlg. Co. et al, Weaver 2.		*	2004
EASTLAND COUNTY—			
Gholson et al, Braxendale 1		*	3750
Panhandle Ref. Co., Webb 3	2		1212
Prairie O. & G. Co., Parsons 2	310		1616
Teatsorth et al, Water Works Fee 3		*	1640
SHACKELFORD COUNTY—			
Harris et al, McLemore 1		*	750
STEPHENS COUNTY—			
The Texas Co., Parks 45-A	¶2¾		1879
NORTH TEXAS			
ARCHER COUNTY—			
J. J. Perkins-Cullum, Turbeville 5		*	1600
COOKE COUNTY—			
Lynch-Stahl et al, Koelzer 4	70		1660
Oil Operators Trust, Koelzer 3	65		1651
Stoffels 1	95		1616
Stroube & Stroube, Koelzer 5-A	60		1636
ELECTRA—			
Verschoyle & Vaughn, Ancell 2	95		1715
JACK COUNTY—			
Wynne-Millette et al, Brentmoor 2		*	315
K-M-A and IOWA PARK—			
Grisham & Marland Oil Co., Ferguson 1		*	1856
MONTAGUE COUNTY—			
Bridwell-Heydrick et al, McGaughey 2	10		1177
WISE COUNTY—			
Winemiller Corp., Beall 1		*	2512
WEST TEXAS			
CRANE COUNTY—			
Gulf, McElroy 35, shot	240		2915
McElroy 38, shot	580		2948
Landreth Prod. Corp., State-Strip 15, shot	80		2993
Magnolia, University-O'Keefe 10, shot	45		2963
Tidal Oil Co. & Turman-Maxwell, University 3-I, shot	6000		2952
CROCKETT COUNTY—			
Gulf, G. L. Thompson 1	1800		988
J. H. Hughes Dev. Co., Powell 2-B	60		2678
Humble & Marland, Powell 3-B	400		2603
PECOS COUNTY—			
Red Bank Oil Co., Smith 1	350		1624
UPTON COUNTY—			
Dixie, Burleson 29	30		2107
Roxana, Bowen 28	70		2152
WINKLER COUNTY—			
Cranfill-Murchison & Marland, Grisham-Hunter 1	3000		2655
EAST CENTRAL TEXAS			
LIMESTONE COUNTY—			
Pandem Oil Corp., Bassett 1		*	6020

Give Air Transportation Cost Data

Wichita, Kansas.—Evidence that interest in aviation among oil companies and individual operators in the Mid-Continent field and elsewhere is almost daily increasing is had in reports being received by the Travel Air Company here and in recent journeys completed by Wichita business men.

Four Wichita business men recently decided to make a business trip through Texas and Oklahoma in a Travelair ship and in mileage covered, gasoline and oil consumed and in computing total expenses the journey brought to light some interesting data. These men were J. H. Turner, J. S. Brown, J. H. Engstrom and George Siedhoff. They took off from the municipal air port here and in five days covered the

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territory centered around Fort Worth, Dallas, Waco, Houston, La Ward, San Antonio and returned by way of Oklahoma City.

During the five days the party traveled 1450 miles and their actual flying time was 14 hours and 45 minutes. This permitted an extended stay at all points en route and also allowed for business engagements covering the entire day or the greater part of it in some instances. It has been estimated that the trip if accomplished by rail would have required about 64 hours in all.

A total of 160 gallons of gasoline and oil were consumed on the trip at a cost of $54.55 and the depreciation on the wear and tear of the airplane was computed at $60. This figured the actual cost per mile of travel at about nine cents.

C. W. Shaw of the Travel Air Company in Wichita has compiled a table of costs of operating the Travel Air OX5, a $2785 plane, estimated on a basis of 1000, 700 and 300 flying hours per year for three years. The tables follow:

At 1000 hours per year:	Per Hour
Motor depreciation	$1.00
Plane depreciation	.60
Breakage or insurance	1.00
Gas and oil	2.05
Interest on $2785 for three years at 6 per cent	.17
Hangar storage at $15 per month.	.18
Total	$5.00

Air mile cost, .055c, at 90 miles per hour.

At 700 hours per year:	Per hour.
Motol depreciation	1.00
Plane depreciation	.76
Breakage or insurance	1.43
Gas and oil	2.05
Interest on $2785 for three years at 6 per cent	.24
Hangar storage at $15 per month.	.25
Total	$5.73

Air mile cost .063c at 90 miles per hour.

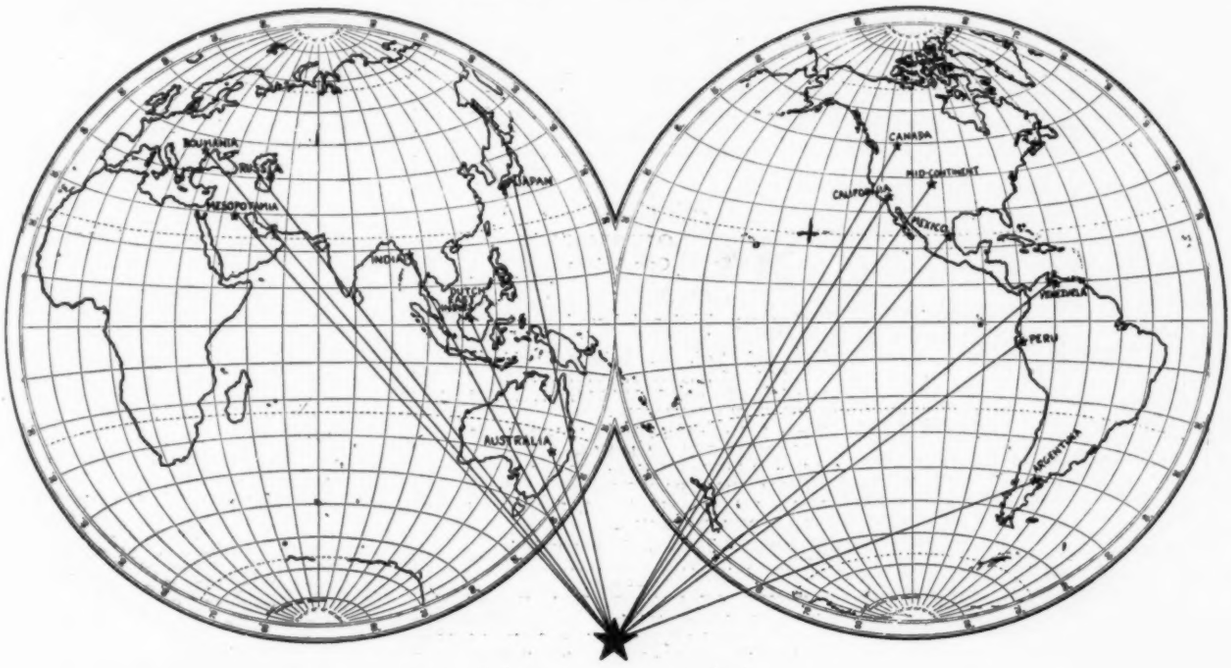
At 300 hours per year:	Per hour.
Motol depreciation	1.00
Plane depreciation	1.57
Breakage or insurance	3.33
Gas and oil	2.05
Interest on $2785 for three years at 6 per cent	.55
Hangar storage at $15 per month.	.50
Total	$9.00

Air mile cost .10c at 90 miles per hour.

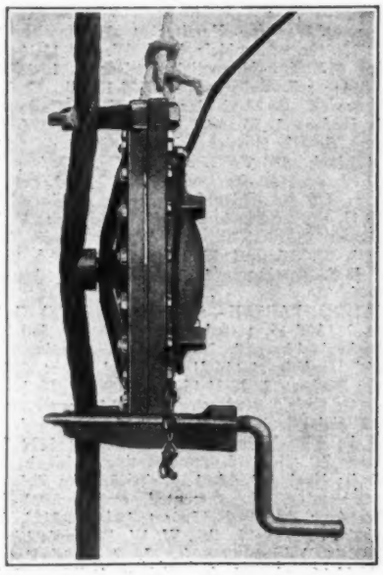
Leasing Campaign On In Ant Hills Area

Lusk, Wyo.—An intensive leasing campaign is in full swing in this area since the discovery by Buck Creek Oil Company of its producer on Ant Hills anticline. Practically the entire area is now blanketed by permits. Buck Creek Oil Company has made two more locations on its properties and if present test will justify it, a six-inch pipe line from the field to the railroad at this town will be laid.

Flying "Around the World" With The Martin-Loomis Automatic Recording Weight Indicator



MARTIN - LOOMIS Automatic Recording Weight Recording Indicators are being used on rotary drilling wells in every oil field in the world today. They have given the operator a safeguard against the danger of twist-offs, a constant guide during drilling, insuring straighter hole, a check on the service from all equipment and on the log of the well, and a permanent graphic time record of all drilling operations. This service and the dependability of Martin-Loomis equipment have won for it international success.



The Indicator can be installed by anyone in a very short time with the tools he has in his car.

The indicator has no moving parts. Simple in its operation and fool-proof.

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Say you saw it in The OIL WEEKLY

WILDCATS FROM ALL SECTIONS

ARKANSAS

Completions

Company, Well and Location		Initial Production Bbls.	Depth
COLUMBIA COUNTY—			
Haynes et al, Runyan, 3-16-21.....	*	525	
UNION COUNTY—			
Crescent Oil Co., Saxon 1, 5-16-16	*	53	

ASHLEY COUNTY—Glassell et al's Keller 1, 10-19-5, coring 2353 ft.

BRADLEY COUNTY—Johnson & Adams Southern Lbr. Co. 1, 12-12-12, sd 2204 ft.

CALHOUN COUNTY — Genther et al's Stout 1, 3-14-16, set 15½-inch at 80 ft.

COLUMBIA COUNTY — Big Creek Oil Co.'s Runyan A-1, 3-16-21, dr 350 ft. Columbia Oil Synd.'s Whitehead 1, 14-19-23, sd 2350 ft. Mitchell et al's Franks 1, 25-19-26, sd 150 ft. Mitchell & Isles Bodcaw 2, 4-20-21, sd 2804 ft. Maier et al's Gantt 1, 15-17-22, dk. Scott-Phillips Davis Lbr. Co. 2, 6-18-20, sd 2145 ft. Wingfield et al's Bodcaw 1, 4-20-21, sd 2025 ft.

DREW COUNTY—McClintock et al's Ogle 1, 35-13-5, sd 2550 ft.

GRANT COUNTY—Jones et al's Meeks 1, 5-4-11, sd 1400 ft.

HEMPSTEAD COUNTY—Arkansas Natural Gas Co.'s Carrigan 1, 2-11-26, dk.

LAFAYETTE COUNT — Ken-Saw Pet. Co.'s Red River Lbr. Co. 2, 5-20-24, sd 2840 ft.

LINCOLN COUNTY—Pine Prairie O. & G. Co.'s Carter 1, 33-10-6, sd 2176 ft.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 2-13-31, sd 2941 ft.

MILLER COUNTY—E. B. Guess M. & R. Bank 1, 30-15-26, dr 2650 ft. Lenze et al's Mann 1, 22-15-26, dr 1492 ft.

NEVADA COUNTY—Aines & Zing's Womack 1, 10-14-21, wosr 1215 ft. Autrey Oil Co.'s Haynie 1, 6-14-20, wosr 1169 ft; Martin A-2, 6-14-20, set 6-inch at 1170 ft; Martin C-1, 6-14-20, set 10-inch at 21 ft. Fruen et al's Rhodes 1, 22-12-21, sd 1515 ft. Humble's Fairchild 1, 6-14-20, set 10-inch at 40 ft. J. J. O'Brien's Haynie B-3, 1-14-21, set 10-inch at 39 ft; Haynie B-5, 11-4-21, plugged back to 1163 ft; Moss B-5, 1-14-21, set 10-inch at 20 ft; Moss B-12, 1-14-21, set 10-inch at 21 ft.

OUACHITA COUNTY—Buffalo Oil Co.'s Culp 3, 22-16-19, sd 2075 ft. Brewer et al's Curry 1, 32-15-19, dr 1100 ft. F. A. Book Tr.'s Johnette 3, 33-15-16, tested sw at 2280 ft. Copenhagen et al's Berg 3, 13-15-17, sd 2193 ft. A. T. Grayson's Reynolds 1, 21-14-17, set 6-inch at 1744 ft. H. M. Harrell's Tr.'s Camden C. & C. 1, 12-12-18, arr to set 6⅝-inch at 1590 ft. Louisiana Oil Ref. Corp.'s Culp 1, 22-15-19, wosr 2189 ft. Magnolia Pet. Co.'s Stout B-1, 28-14-16, sd 2108 ft. Marine Oil Co.'s Hays 5-A, 4-16-15, lcn; Snyder 14, 34-15-15, wosr 2363 ft. Moody Oil Corp.'s Bacon 1, 12-11-18, set 10-inch at 60 ft. Owenwood Oil Corp.'s Snyder 7, 34-15-15, sd 2665 ft. J. D. Reynolds Chandler 1, 3-14-16, arr to abn 1900 ft. The Texas Co.'s Davison 1, 26-15-16, testing 2014 ft.

UNION COUNTY—Brown et al's Slaughter 1, 2-17-16, sd 2296 ft. Bondurant et al's Garner 1, 8-12-18, sd 2635 ft. Booth et al's Rawland 1, 8-17-11, rig. Gulf Ref. Co.'s Murphy 45, 4-16-15, dk. Imperial O. & G. Co.'s Murphy 5, 9-16-15, sd 2565 ft; Goodwin 1, 26-17-16, sd 3118 ft. W. R. Keever's Ezell 2, 12-17-15, cemented back to 2000 ft; Ezell 3, 12-17-15, lcn. Keene & Wolfe's Murphy 6, 9-16-15, dk. Lyall et al's Stegall 1, 11-17-15, sd 47 ft. Lion O. & R. Co.'s Hayes 6, 4-16-15, wosr 2360 ft; Hays 7, 4-16-15, set 10-inch at 185 ft. Magnolia's Crawford 3, 8-16-16, dk; Laney 3, 8-16-16, dk; Laney 4, 8-16-16, dk; Murphy 3, 8-16-15, tested dry at 2623 ft; Wilson 6, 17-16-15, milling 2747 ft; Wilson 7, 17-16-15, dk; Carroll 1, 1-17-14, coring 2829 ft. Mazda Oil Corp.'s Boyd 1, 9-17-15, r 2450 ft. Mountz et al's Pratt 6, 8-18-15, recemented 6-inch at 2146 ft. Murdock et al's Vestal 1, 17-16-15, sd 2561 ft. Magna Prod. Co.'s Murphy 1, 15-16-15, wosr 246 ft. National Cons. Pet. Co.'s W. A. Fagg 1, 8-16-16, sd 2642 ft. Natural Gas & Fuel Corp.'s Lawton C-4, 10-16-15, sd 2436 ft; Hill B-3, (formerly No. 1), 5-16-16, lcn. J. J. O'Brien Saxon 1, 16-16-16, sd 2658 ft. Ohio Oil Co.'s Murphy 5, 9-16-15, sd 2736 ft; Pumphrey 1, 1-17-14, sd 3212 ft; Crain 2, 1-17-14, coring 2858 ft. Owenwood Oil Corp.'s Goode 1, 31-16-13, sd 3107 ft. Pitcher et al's Arkansas Timber Co. 1, 21-17-11, dk. Rovenger Oil Corp.'s Harrell 4, 15-17-16, dk. S. Richardson's Lawton 2, 10-16-15, fsh 2330 ft. Rice et al's Newton 1, 13-17-16, dr 2788 ft. Skelly Oil Co.'s Roper 12, 3-16-15, whipstocked casing 1430 ft. Southern Crude Oil Purchasing Co.'s Wells A-5, pumping sw 2708 ft; Lyell B-7, 3-16-15, arr to deepen 2360 ft. Smitherman McDonald's Saxon B-5, (formerly B-4), 5-16-16, wosr 2534 ft. Sun Oil Co.'s Hays 3, 3-16-15, arr to abn 2275 ft. Wingfield et al's Greer 1, 15-19-13, sd 50 ft.

LOUISIANA

Completions

Company, Well and Location		Initial Production Bbls.	Depth
CADDO PARISH—			
Greenwod Prod. Co., Thigpen-Herold 2, 24-18-16	*	927	
Standard, Trosper 2, 34-18-16.....	*	3374	
DE SOTO PARISH—			
Berry & Legrande, Giaque 1, 3-10-11	*	....	
MOREHOUSE PARISH—			
Falcon Drlg. Co., Gladney 1, 5-21-7e..	*	2958	
OUACHITA PARISH—			
Jordan Drlg. Co., Fudicar 2, 25-18-4e	*	2710	
RAPIDES PARISH—			
Minnesota Oil Corp., Wattermack 1, 7-5-3w	*	2996	

BIENVILLE PARISH—E. J. Forrest's Perritt 1, 11-17-6, sd 415 ft.

BOSSIER PARISH—Bahna & Davis' Mays 2, 22-23-12, set 6-inch 3088 ft. Bethany O. & G. Co.'s Dodson 2, 16-23-12, set 12-inch at 453 ft. Doern et al's Bollinger 1, 9-22-11, arr to deepen at 2684 ft. Hamiter et al's Hamiter 1, 10-23-13, rig. Humble's B. & W. 30, 15-19-11, coring 4037 ft. Magnolia's Dodson 1, 16-23-12, dr 1814 ft; Z. Roberson 1, 23-23-12, dk; G. W. Roberson 1, 23-23-12, lcn. J. S. McCullough Tr.'s Hodges 3, 25-16-12, set 10-inch at 175 ft. Palmer Corp.'s Bossier L. & L. Co. 4, 9-16-11, set 4½-inch 5370 ft. Simms Oil Co.'s Dodson 1, 15-23-12, dr 2906 ft; Dodson 2, 15-23-12, set 9-inch at 950 ft. Sales & Walkers's Bollinger 3, 30-23-11, arr to deepen 2690 ft. The Texas Co.'s Wilkinson 1, 26-23-12, rig. Walker et al's Antrim 1, 28-23-12, sd 1360 ft. Woodley & Collins' J. S. Farrington 1, 23-23-12, arr to deepen 3093 ft.

CADDO PARISH—Arkansas Fuel Oil Co.'s Lane 2 13-21-15, tested sw at 3630 ft. Belchic & Laskey's Sharp 2, 22-18-16, rig. Bendeum & Trees' Huckaby 1, 14-21-15, tested sw at 3670-76 ft; Bashara 2, 23-31-15, dr 3209 ft. Bethany O. & G. Co.'s Offenhauser 1, 1-20-16, wosr 2260 ft. Dixie's C. M. L. 9, 23-21-15, set 8-inch at 2498 ft; Files-Mabry B-6, 14-21-15, dr 3180 ft; Slattery 10, 27-21-15, re-cementing 4½-inch cas 4037 ft; Noel A-2, 13-21-15, dr 3887 ft; Robertshaw 89, 14-21-15, cemented cavity 3203 ft; Robertshaw 90, 14-21-15, set 10-inch 2363 ft; Huckaby 4, 11-21-15, dk. W. W. Dodson's Rives 6, 5-20-16, bailing 1866 ft. J. B. Files' Payne 1, 35-23-16, sd 925 ft. Falson Drilling Co.'s Schmidt 1, 27-20-15, set 6-inch 2148 ft. T. D. Gary et al's Hart 1, 29-21-16, set 6-inch 1950 ft. Greenwood Prod. Co.'s McCutcheon 1, 15-17-16, set 12½-inch 83 ft; Scott 1, 5-16-16, set 12½ inch 80 ft. Gulf Ref. Co.'s Tyson 15, 14-21-15, dr 3765 ft; Herndon 10, 15-21-15, dr 3629 ft. Golden Rod Oil Co.'s Hampton A-1, 15-21-15, dr 3355 ft. Haynes Bros.' Murray 2, 14-21-15, tested sw at 3669 ft; Spell 2, 15-21-15, set 12½-inch 192 ft. Lewis Oil Corp.'s Vespy 9, 15-21-15, dk. Magnolia Pet. Co.'s Bell 1, 4-17-16, dr 3044 ft; Bell 2, 4-17-16, lcn; J. W. Furrh 1, 28-18-16, dr 1150 ft; J. Furrh 1, 32-18-16, lcn; Dillon 18, 24-21-15, dk; Dillon 21, 23-21-15, lcn; Robertshaw 21, 23-21-15, dr 3572 ft; Raines 26, 22-21-15, dr 2579 ft. Ohio Oil Co.'s Aaron B Land Co. 1, 32-23-16, sd 1553 ft; Plum 1, 32-23-16, sd 1619 ft; Smith 25, 12-21-15, dr 4730 ft. Pittsburgh O. & D. Co.'s Huckaby 1, 15-21-15, testing 3740 ft; Herndon 1, 15-21-15, tested gas and sw at 3815 ft. D. C. Richardson's Youree-Randolph 5, 13-20-15, set 6⅝-inch at 2105 ft. Shawmup Pet. Co.'s Jolly 5, 22-22-15, lcn. Shreveport Oil Corp.'s State 1, 23-21-16, dk; State 2, 27-21-15, sd 2400 ft. Simplex Oil Co.'s Thomas et al's 3, 15-20-15, wosr 2355 ft. Standard Oil Co.'s Stiles 179, 33-21-16, set 6-inch at 1814 ft; Stiles 189, 27-21-16, rig. Superior Oil Co.'s Youree 6, 26-20-15, set 6-inch 2220 ft. The Texas Co.'s C. M. L. Co. 47, 23-21-15, waiting for rig at 3657 ft; C. M. L. 49, 32-21-15, dr 3464 ft; C. M. L. 50, 23-21-15, set 10-inch 2369 ft; C. M. L. 51, 23-21-15, dr 1658 ft; Mabry 10, 15-21-15, dr 3430 ft; Herndon 6, 14-21-15, set 8¼-inch 3675 ft; Herndon 8, 14-21-15, blew out 3650 ft; Herndon 9, 14-21-15, dr 2917 ft; Herold 9, 14-21-15, dr 3284 ft; Herold 10, 14-21-15, set 10-inch 2350 ft; Raines 19, 15-21-15, dr 3547 ft. Tubbs et al's Hines 1, 16-14-16, dr 50 ft. Woodley Pet. Co.'s Knight B-2, 11-15-12, testing 1935 ft; Knight B-3, 11-15-12, set 10-inch at 97 ft.

CALDWELL PARISH — Grayson Oil Co.'s Crockett 1, 6-12-4, sd 2692 ft. Southern Crude Oil Purchasing Co.'s Caldwell L. & T. Co. 8, 5-13-5e, dr 1350 ft.

CATAHOULA PARISH — S. D. Hunter's Tensas Delta 2, 21-9n-5e, rig.

CLAIBORNE PARISH — Magnolia's Lee 1, 16-22-8, dr 4089 ft.

DE SOTO PARISH—J. H. Askew's Richardson 1, 25-13-11, set 10-inch 105 ft. Clark & Melat's Payne 2, 12-11-16, testing 2613 ft. Chal Daniel's et al's Frost Johnson 1, 1-11-16, sd 100 ft. Dixie Oil Co.'s Jenkins 1, 9-12-11, dr 5553 ft. Reliance Drilling Co.'s Jones 1, 8-11-14, sd 2815 ft. W. M. Sebastian's Sebastian 1, 11-10-13, sdtrk 3405 ft. The Texas Co.'s Sample C-15, 36-13-12, testing 2551 ft; Wemple A-6, 2-12-12, wtg on cable tools 2400 ft; Brinkerhoff B-36, 30-12-10, sd 2502 ft.

FRANKLIN PARISH — Barbour Oil Co.'s Baker 1, 3-15-7e, sd 2884 ft.

GRANT PARISH—Holmes et al's Fee 2, 17-9-1e, sd 1700 ft. L. C. Swope et al's Fee 3, 18-9-1e, plugging off bottom 1607 ft; Fee 4, 18-9-1e, wosr 1598 ft; Fee 5, 18-9-1e, dk.

LA SALLE PARISH—Ayers Bros.' Urania 5, 3-10-2e, wosr 1530 ft. Bruce Hunt's Urania 6, 7-10-2e, set 10-inch 120 ft. Eibert Pet. Co.'s Tonnehill 1, 34-11-2e, set 10-inch 120 ft. Hope O. & G. Co.'s Urania 4, 19-10-2e, wosr 1570 ft. Natural G. & F. Corp.'s Urania M-11, 20-10-2e, wosr 1550 ft. Wingfield et al's Gibson 2, 2-9-1e, dr 2880 ft. Zoder et al's Urania 5, 7-10-2e, dr 75 ft.

MOREHOUSE PARISH—Consolidated Carbon Co.'s Perry 1, 14-20-4e, lcn. W. C. Feasel's Faulk 1, 15-20-4e, set 6-inch 2093 ft. Keisker et al's Bonita Lbr. Co. 1, 10-23-9e, dk. Natural Gas Prod. Co.'s Tensas Delta 9, 27-22-4e, rig; Tensas Delta 10, 27-22-4e, lcn. The Texas Co.'s Sevley 1, 22-20-6e, dr 2651 ft. United Carbon Co.'s Atkins 1, 26-20-5e, dk.

NACHITOCHES PARISH—Lawson & Pharris' Clark & Morse 2, 3-5-6w, sd 1244 ft. Ohio Oil Co.'s L. & A. 2, 26-13-6w, r 3036 ft. Tate et al's Leopole 1, 4-10-10, lcn.

OUACHITA PARISH—C. W. Pearson's Feazel 1, 17-19-4e, set 12-inch 190 ft. J. S. Gould's Grayling Lbr. Co. 1, 11-15-2e, set 8¼-inch 2228 ft. Industrial Gas Co.'s Sullivan 2, 5-18-4e, set 12-inch at 188 ft. Louisiana Dev. Co.'s Fee 44, 6-19-5e, set 12½-inch 187 ft. Ouachita Natural Gas & Oil Co.'s D'Arbonne 2, 25-19-2e, fsh 2780 ft. Ouachita Gas Co.'s Leiber 4, 3-19-4e, arr to test 2148 ft. Peerless Co.'s Moore 3, 49-20-4e, lcn.

RAPIDES PARISH — George Sebastier's Ritchie 1, 38-5-4, sd 2750 ft.

RICHLAND PARISH — Gulf Ref. Co.'s Marshfield 2, 20-17-6e, dr 1907 ft. Helm et al's Tensas 1, 10-14-5e, sd 22 ft. Louisiana Pet. Co.'s Binion 1, 22-17-6e, sd 2474 ft. Moody & Seagraves' McCoy 1, 36-16-6e, dr 2155 ft; Helmer 1, 20-16-6e, set 6-inch 2302 ft; Jones 1, 15-18-7e, dr 400 ft. Natural Gas & Fuel Corp.'s Sortor 1, 20-16-6e, dr 1850 ft. Oliver et al's Hatch 1, 2-15-5e, sd 2316 ft. Ruston Drilling Co.'s McCoy 1, 3-16-6e, sd 2341 ft; McCoy 2, 8-16-6e, set 6-inch at 2320 ft. Standard Drilling Co.'s Delta H. L. Co. 1, 22-16-7e, coring 1315 ft. Tex-La Carbon Co.'s Broughton 1, 1-15-6e, dr

At river crossings *and* lagoons; thru alkali *and* other bad lands, it pays to use *the* best rust-resisting wrought iron pipe — *Byers Pipe* — Its economy is convincingly — — demonstrated *by* service records

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BYERS PIPE

GENUINE WROUGHT IRON

Say you saw it in The OIL WEEKLY

2723 ft. Woodley Pet. Co.'s Hemler 1, 31-18-7e, dr 1952 ft.

SABINE PARISH—Arkansas Fuel Oil Co.'s Logan A-1, 23-10-12, dr 3255 ft; Logan 10, 32-10-12, dr out cem 3980 ft; Logan 11, 33-10-12, dk; Moore 2, 32-10-12, rig. Emlet et al's Bowman Hicks 7, 11-7-14, set 6⅝-inch 2703 ft; Mansfield H. L. Co. 1, 15-7-14, sd 515 ft. Foster et al's Nabors 1, 30-10-12, coring 3235 ft. Frazier et al's Harris 1, 29-10-12, dr 1955 ft. Longoria et al's Burkett 1, 9-9-13, dk. H. I. Morgan's Reese 1, 6-9-12, sd 3385 ft. Magnolia's Rembert 1, 32-10-12, wosr 3240 ft; Hall 2, 33-10-12, dr 1200 ft. Moffatt et al's Moore 2, 5-9-12, set 6⅝-inch 3166 ft. Tate et al's Cook Land Co. 1, 23-10-11, r 3140 ft. A. H. Tarcer's Long Bell Lbr. Co. 1, 5-8-13, sd 2588 ft.

UNION PARISH—Camette et al's Tugwell 1, 21-22-1e, sd 2112 ft. Interstate Natural Gas Co.'s Parks 1, 32-20-3e, rig. Natural Gas Co.'s Production Co.'s Peak 3, 5-20-4e, set 6-inch 2075 ft. Southern Carbon Co.'s Harris 1, 20-20-4e, dr 50 ft; Jackson 1, 20-20-4e, set 6-inch 2096 ft.

WEBSTER PARISH—Crusader Oil Prod. Co.'s Hope 18, 24-21-10, dr 1914 ft. Magnolia Pet. Co.'s Cox 3, 23-21-10, dr 4256 ft; Branton 2, 6-22-9, set 6⅝-inch 2600 ft; Aarnes Cox 3, 22-21-10, dk; Marshall 4, 21-21-10, set 6⅝-inch 2547 ft; Waller-Obier 1, 32-23-9, dr 1950 ft; Wise 1, 30-23-9, lcn; Cole 1, 27-21-10, rig; D. G. Cox 1, 22-21-10, dr 50 ft. Ohio Oil Co.'s Bank of Cotton Valley 2, 22-21-10, dk; Holloway 4, 23-21-10, dr 2253 ft. Shreveport-El Dorado Pipe Line Co.'s Gamble 1, 33-20-8, coring 2945 ft. R. W. Norton's Josey & Massey 1, 27-21-10, dr 4560 ft.

WINN PARISH—Dodge et al's Tremont 1, 35-13-5w, sd 1558 ft. J. C. Long's Milam 1, 28-13-3w, sd 1550 ft. Ohio Oil Co.'s Rolen 1, 9-12-1w, dr 2034 ft; Edenborne 1, 31-10-4w, r 127 ft. H. M. Roark's Southern Mineral Co. 1, 19-11-3w, set 12½-inch 40 ft. F. A. Schuman's Albritton 1, 27-10-1e, sd 1518 ft.

WEST CARROLL PARISH—Palmer Corp.'s Pioneer Cooperage Co., 1, 16-20-1e, setting 6⅝-inch 2680 ft. Phillips Pet. Co.'s Darnell 1, 32-20-9e, set 6¼-inch 2250 ft.

SOUTHERN CALIFORNIA

BOYLE HEIGHTS — Haskell M. Greene's P. A. S. F. 1, dr 2961 ft.

CLAREMONT—Claremont O. & G. Co.'s 1, sd 1130 ft.

DAVIDSON CITY—Bert Moss' 1, 6¼-in cas set at 6611 ft, td 6620 ft.

DOMINGUEZ—Dominguez Extension Oil Co.'s R. B. 1, sd 5510 ft.

EL SEGUNDO—Rider Oil Synd.'s El Segundo 1, sd 2300 ft. Southern California Drilling Co.'s Matteson 1, sd 4865 ft.

GARDENA—Circle O. & G. Co.'s Pomeroy 1, sd 4130 ft.

HAWTHORNE — San Clemente Oil Co.'s Peck 1, dr 4206 ft. Smith Pet. Co.'s Johnson 1, making some oil, td 6215 ft. Dupree Drilling Co.'s 1, rig.

HUNTINGTON BEACH—J. A. Brower's 1, rigging rotary. Calnan Petroleum Co.'s S. & W. 1, testing for prod at 4480 ft. Pet. Securities Co.'s Mills 1, dr 4350 ft. James O'Donnell's Gothard 1, dr 4509 ft.

INGLEWOOD—Alenson & Co.'s Santous 1, sd 3520 ft.

LANCASTER—John B. Harding's La Loma 1, cmt 800 ft.

MAYWOOD—Magnolia Pet. Synd.'s 1, sd 4450 ft.

MONTEREY PARK—Monterey Park Pet. Co.'s Browning 1, dr 1010 ft.

NEWHALL—W. W. Stabler's Castaic 1, sd 3410 ft. Thomason-McCoy's S. F. C. 1, sd 1610 ft.

OLIVE—Standard's 1, dr 3201 ft.

ORANGE—Chas. A. Son's Pinkerton 1, dr 1573 ft.

PLACENTIA—Shell's Allec 1, dr 3249 ft.

POTRERO—Associated Oil Co.'s Cypress 1, testing for prod at 4450 ft. California Eastern Prod. Co.'s Cypress 1, sd 4820 ft.

SAN FERNANDO—Shell's Mission 1, dr 3646 ft. Joseph Hummell's 1, sd 50 ft. W. O. Brubaker's Pacoima 1, sd 2690 ft.

SAN JOSE HILLS — Bardeen Oil Co.'s Didier 1, dr 2260 ft. D. & B. Oil Co.'s Amar 1, sd 4380 ft.

SAN JUAN CAPISTRANO—O. K. Carr's Forster 1, dr 3525 ft.

TELEGRAPH CANYON—Quadra Pet. Co.'s M. J. M. 1, sd 4210 ft.

WATTS—Southwest Pet. Co.'s Ramsaur 1, dr 3160 ft.

WATSON — White-Behr Consolidated Oil Co.'s Watson 1, rigging rotary.

YORBA—Standard's Y. L. W. 1, dr 3408 ft. Petroleum Securities' Kraemer 1, dr 2330 ft.

MISCELLANEOUS

RIVERSIDE COUNTY—Corona O. & G. Co.'s 1, sd 1550 ft. Hemet Pet. Co.'s Ward 1, dr 1328 ft. Spindletop Oil Synd.'s Salton 1, co 2750 ft. Trabuco Oil Co.'s 1, dr 2407 ft.

SAN BERNARDINO COUNTY — Colton Terrace Oil Co.'s 1, dr 1440 ft. Como Oil Co.'s Cajon 1, sd 2845 ft. Del Rosa Oil Co.'s 2, sd 915 ft. Hesperia Oil & Gas Co.'s 1, sd 3310 ft. H. & P. Oil Co.'s Ranger 1, co 2140 ft. td 2150 ft. McCarthy & Collier's McCarthy 1, sd 1340 ft. Western Pacific Oil Co.'s 3, dr 3000 ft. Lamona Oil Assn.'s, dr 920 ft.

SAN DIEGO COUNTY—Cardiff Oil Corp.'s Turner 1, sd 2805 ft. Southern O. & G. Assn.'s Randall 1, sd 2450 ft. Oceanside Oil Co.'s Dunn 1, sd 3210 ft. Torrey Pines Oil Co.'s 1, sd 480 ft.

NORTHERN CALIFORNIA

Completion

MONTALVO—
Standard, Montalvo 1 ..... * 6796

FRESNO COUNTY

CLOVIS—Fresno-Madera Oil Co.'s 1, 18-14-21, dr 3890 ft.

KETTLEMEN—Superior Oil Co.'s 1, 26-21-17, dr 725 ft.

NORTH COALINGA—Superior Oil Co.'s 1, 16-17-14, dr 1130 ft.

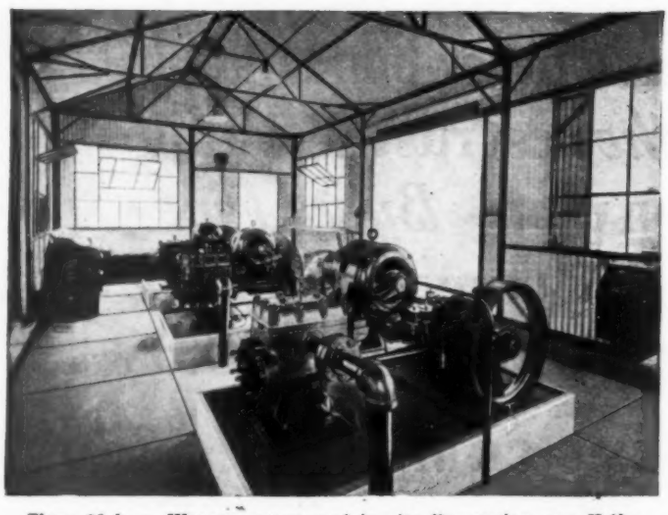
KERN COUNTY

BAKERSFIELD — Pacific Eastern Prod. Co.'s 1, 18-28-22, dr 1100 ft.

BELRIDGE—Zurich Oil Co.'s 1, 18-28-22, dr 1100 ft.

BUTTONWILLOW—Milham Explo. Co.'s

MOTORS FOR PIPE LINE PUMPING



Three 25 h. p. Wagner motors used in pipe line station near Keifer, Oklahoma.

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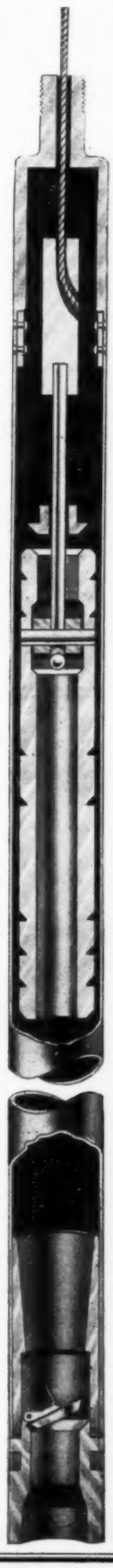
Chisel Bottom

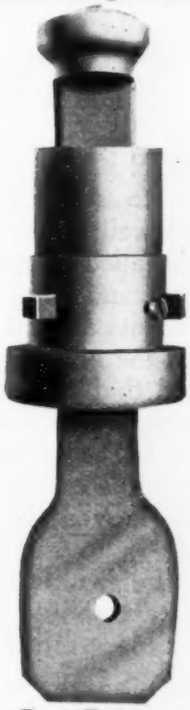
Star Bottom

BOOTH NUMBER 57



TEXAS BUILDING

Sand Pump Bottom



Dart Bottom

Miller Combination
Office Phone No. 341
SAPULPA

Bailer & Pump Co.
Factory Phone 1649-J
OKLAHOMA

Kern 1A, 8-28-23, plugged back to 3250 ft from 4660 ft, making 6,000,000 cu ft gas; Salisbury 1, 7-29-24, swabbing 4019 ft, no kick.

COMANCHE POINT—Kern 29 Oil Co.'s 1, 29-31-30, sd 2415 ft.

DELANO—C. C. M. O.'s 1, 23-25-27, setting 6¼-inch cas at 2165 ft, td 2270 ft. North American Consolidated's 1, 5-25-25, sp.

DEVIL'S DEN—W. T. Garrett's 1, 30-25-19, rig. Marathon Oil Co.'s 1, 13-25-18, sd 4390 ft. Midway-Northern Oil Co.'s 1, 25-25-18, cmt 2135 ft. R. H. Sayers' 1, 25-25-18, sd 1475 ft. Robbins Oil Co.'s 1, 25-25-18, sd 2280 ft.

EDISON—George F. Getty's 1, 22-29-29, dr 1013 ft. General Pet.'s 1, 5-30-29, dr 1370 ft.

GREENFIELD—Mays-Valencia's 1, 31-30-28, rig.

GOULD HILLS — California Kentucky Oil Co.'s 1, 8-29-21, dr 1575 ft. Bomke & Ball's 1, 12-29-30, co 930 ft. Mendocino-Midway Oil Co.'s 1, 28-29-21, sd 2930 ft. Rhoads Oil Co.'s 1, 20-29-21, sd 1585 ft. L. E. Westrich's 1, 19-29-21, sd 1800 ft.

McKITTRICK—Abbott Pet. Co.'s 1, 2-30-21, sd 1940 ft. Lacy-Esper Pet. Co.'s 1, 18-19-22, sd 3265 ft. Keefe-Morrison's 1, 8-30-22, cmt 2285 ft. Myrtle E. Oil Co.'s 1, 8-29-21, sd 915 ft. Ozena Oil Co.'s 1, 27-29-21, dr 1375 ft. Ridge Oil Co.'s 1, 13-30-21, sd 4045 ft.

MON BLUFF—Miocene Oil Co.'s 1, 34-27-28, rigged up, sd. Shell's Glide 1, 3-28-28, sr 790 ft.

NORTH MIDWAY—Gore Oil Corp.'s 1, 34-30-22, sd 1350 ft. Electric Pet. Corp.'s 1, 34-30-22, dr 1286 ft.

SHALE HILLS—Huntington-Hawthorne's 1, 35-26-18, sd 600 ft. H. S. Mountford's 1, 18-27-19, sd 2690 ft.

SUNSET—Raleigh Oil Co.'s 1, 8-11-23, dr 2276 ft. Fresno-Sunmaid Oil Co.'s 1, 16-11-24, sd 4200 ft.

TEMBLOR HILLS—Fortuna Oil Co.'s 1, 28-32-23, sd 2635 ft.

TEHACHAPI-MOJAVE—C. R. Asmussen's 1, 21-11-11, sd 1510 ft. Crusaders Oil Co.'s 1, 21-10-10, testing 6¼-inch, td 2367 ft. John B. Harding's 1, 5-10-10, sd 1050 ft.

KINGS COUNTY

KETTLEMAN—Ahlburg Gasoline Corp.'s 1, 7-23-23, rigged up, sd. Associated's 1, 12-23-18, sd 2045 ft. Bolsa Chica Oil Co.'s 1, 30-23-19, dr 3340 ft. C. C. M. O.'s 1, 17-24-19, fsh for dr pipe 5000 ft. General Pet. Corp.'s 1, 4-24-19, dr 3500 ft; 1, 22-26-18, sr 4430 ft, td 4445 ft. Milham Explo. Co.'s 1, 2-22-17, dr 3600 ft. Hugh McPhail's 1, 13-4-18, sd 2055 ft. South Coalinga Oil Co.'s 1, 35-24-19, dr 2760 ft.

SANTA BARBARA COUNTY

GOLETA—Barnsdall's Edwards 1, dr 2522 ft. Berry Oil Co.'s Pomato 1, sd 2150 ft; Cavaletto 1, sd 2506 ft. California Eastern's Doty 1, sd 2090 ft. Graham-Loftus Oil Co.'s Orella 1, dr 1500 ft. J. J. Rekar's La Patera 1, dr 1111 ft.

SANTA YNEZ—San Marcos Oil Synd.'s 1, 34-7-29, dr 1875 ft.

SANTA BARBARA—Twin State Oil Co.'s 1, lcn. Channell Oil Co.'s 1, 22-4-26, dr 5386 ft. Hollywood Oil Co.'s 1, 35-5-35, sd 1300 ft.

SUMMERLAND — Summerland Oil Co.'s Becker 1, oil showing at 3000 ft.

VENTURA COUNTY

CAMARILLO—Standard's Camarillo 1, oil showings from 5250 to 5490 ft.

FILLMORE—Sespe Oil Co.'s Smith 2, sd 4003 ft.

HOPPER CANYON—Bishop-Buckeye's 2, sd 200 ft. Hopper Canyon Oil Co.'s 1, sd 5005 ft.

MOORPARK—E. A. Parkford's Lloyd 1, dr 3530 ft. Shell's Berylwood 1, dr 4914 ft. H. W. Schroeder's Strathern 1, dr 1707 ft.

MONTALVO—Standard's Montalvo 1, abn 6796 ft.

RINCON—C. C. M. O.'s Hobson 1A, dr 6609 ft; Hobson 1B, dr 5026 ft. Pan-American's 1, dr 1933 ft. Montecito Oil Producer's 1, 13-4-25, dr 3433 ft. Scott Pet. Securities' 1, 35-4-25, sd 100 ft.

SESPE—Group Synd.'s 1, 1-4-20, lcn.

SOUTH MOUNTAIN — Ring Pet. Corp.'s Converse 1, cmt 3950 ft.

SULPHUR MOUNTAIN — Geiss & Bradford's 1, 21-4-22, cmt 1985 ft. Ventura Crude Co.'s 1, 23-4-22, lcn.

SQUAW FLATS—Border Oil Co.'s 1, sd 675 ft.

TIMBER CANYON—San Pedro-Point Fermin Oil Co.'s 1, 13-4-21, fsh 200 ft.

VENTURA—Associated's Dabney-Lloyd 1, dr 5810 ft. Star Pet. Co.'s Star-Canet 1, dr 5243 ft.

MISCELLANEOUS

CONTRA COSTA COUNTY—Wm. Edwards' 1, 31-3-2, dr 2225 ft.

SAN LUIS OBISPO COUNTY — Waklin Pet. Co.'s 1, 27-27-11, testing cmt 2475 ft. Elberta Midway Oil Co.'s 1, 32-31-13, dr 3020 ft. San Luis Synd.'s 1, 29-31-15, dr 560 ft. Paso Robles Oil Co.'s 1, 34-27-15, setting 8¼-in cas 1400 ft. Shandon Oil Co.'s 1, 31-27-15, co 3000 ft, td 3011 ft. Painted Hills Oil Co.'s 1, 34-30-10, will deepen from 1550 ft. Panorama Oil Co.'s 1, 7-31-21, co 2025 ft. Texas-Pacific Oil Co.'s 1, 25-32-14, dr 200 ft. Barnesberg Oil Co.'s 1, 25-23-14, sd 4500 ft. California's Pet.'s 1, 26-32-15, lcn.

SAN MATEO COUNTY—Shell's Cowell 1, 8-6-5, dr 4419 ft.

SONOMA COUNTY—Shell's Murphy 1, 8-5-7, dr 6360 ft. Murphy 2, 8-5-7, coring 1010 ft.

TULARE COUNTY—Federal Explo. Co.'s Kinsella 1, 15-22-24, dr 5235 ft.

MOUNTAIN STATES

MONTANA

BEAVERHEAD COUNTY — Crowley Oil Co., Crowley Dome 1, ne 2-7s-10w, rig up.

BIG HORN COUNTY—Burton Wood et al, Jones 1, 28-1n-31e, rig up. Burton Wood et al, Kelly 1, 13-1s-31e, rig up.

BLAINE COUNT—Cassady-Nichols, ne 29-34-18e, lcn.

CASCADE COUNTY—Greater Great Falls Oil Co., Roos 1, nw ne 32-22-3e, showing oil at 1368 ft.

CARBON COUNTY—Ohio Oil Co., Northern Pacific 1, 11-7s-21e, dr 1995 ft. Book et al, Moore 1, 13-17-23, rig.

CHOUTEAU COUNTY—Northleld Oil Co.,

Strong As Gibraltar

The IRON KING pulling machine is built to stand the ravages of time, as well as the terrific strains that it is called to meet. In spite of its steel and iron construction, which meets all and every requirement of the oil field, it is so nicely balanced that one man handles it with ease. How quickly it can be handled is shown by a prominent Pennsylvania operator who writes: "I have moved the machine 400 feet, set it up and had the polish rod on the ground in 12 minutes." Every lease should have an IRON KING. Has yours?

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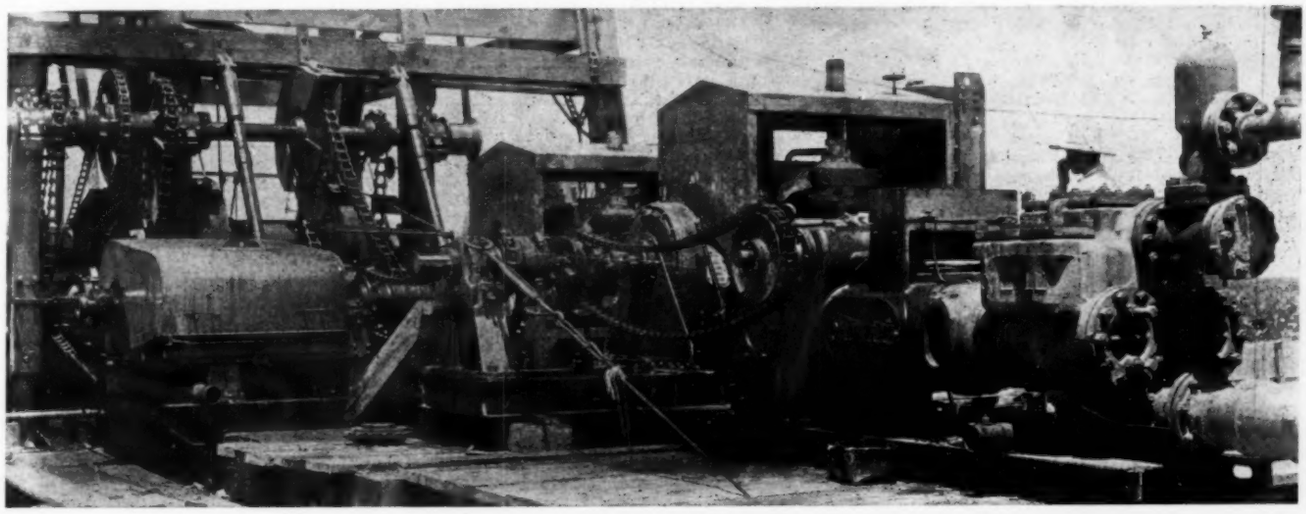

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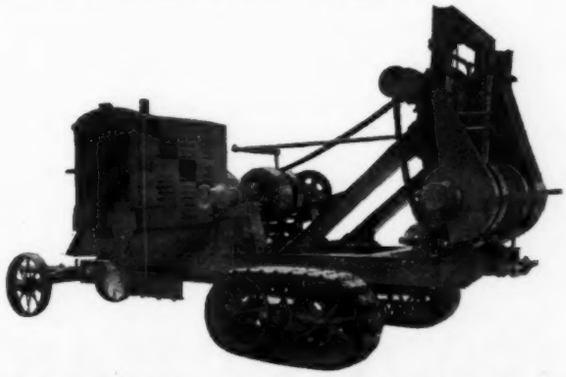

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Houston, Texas, U. S. A.

Say you saw it in The OIL WEEKLY

Reliance 1, ne 20-26-4e, showing at 2300 ft. McCue Interests, Doheny 1, ne 32-26-2e, showing at 2165 ft. Mid-States Oil Co., McNaughton Dome 1, 29-21-14e, lost hole at 1325 ft.

FERGUS COUNTY—Winnett Drilling Co., Winnett 1, sw 6-14-27e, rig up.

FLATHEAD COUNTY—Flathead Pet. Co., Reservation 1, sw 35-23-22w, rig up.

HILL COUNTY—Gad-Hamilton et al, sw 15-30-13e, spudded. Helvetia-Briggs 1, sw 25-35-13e, rigged. Gad-Hamilton et al, Goldstone 1, sw 25-36-9e, rig up. Equitable Oil Co., Perkins 1, 34-33-12e, dr below 1500 ft.

LIBERTY COUNTY — Chester Oil, Inc., Laid 1, 31-37n-6e, rig. Patterson et al, Elmer O. & G. Co., 10-37n-5e, dr 150 ft.

MADISON COUNTY—Madison County Oil Co. 1, nw 17-7s-1w, dr below 1530 ft.

MUSSELSHELL COUNTY—Harte et al, ne Brown 1, 19-37n-4e, dr below 250 ft. Sunburst 24-7-24e, lcn. McElwain Oil Dev. Assn. 1, 2-11-22e, rig up.

RICHLAND COUNTY—Community Drill. Co., Pioneer 1, rigging to drill deeper from 2600 ft.

ROOSEVELT COUNTY—Pioneer O. & G. Co. 1, se 35-27-51e, sd at 1590 ft.

PONDERA COUNTY—Montana-Pacific Oil Co. 1, 32-28n-2w, sd temporarily to perfect title. California Pet. Corp. 1, se 36-26-2w, dr at 1450 ft. Scoville et al, Valier Dome 1, ne 35-30-3w, sd at 3650 ft. California Pet. Corp. Rouns 1, nw 13-26-2, rigged up. Ute-Moe-Denzer, 32-302w, shoeing at 3220 ft.

PHILLIPS COUNTY—Big Dome Oil Co., Bloomberg 1, ne ne 1-32-32e, rig.

SWEETGRASS COUNTY—Shoshone Consolidated Oil Co., nw 23-2n-15e, drilling below 1000 ft.

TOOLE COUNTY—Kevin-Flathead Oil Co., Toole 1, ne 27-36n-23, underreaming pipe at 1950 ft. Zenith-McDonald, Lowey 1, 25-36n-1w, resuming at 1545 ft. Montana-Pacific Oil Co. Clarke 1, se 20-37-1e, dr at 300 ft. Sunburst O. & G. Co. Grandview 1, 10-34n-3e, rig up.

WHEATLAND COUNTY—Churchwell-Martin et al, 1, se 35-7n-13e, abn.

YELLOWSTONE COUNTY — Neugigate Oil Co., Happy Hollow 1, nw nw 25-1s-24e, rig up.

COLORADO

ARAPAHOE COUNTY — McDeb Drilling Co., Fitzsimmons 1, 7-4s-66, dr below 2500 ft.

BACA COUNTY—Phillips-Jones, Jones 1, 26-34-48, sd at 1745 ft.

BOULDER COUNTY—Left Hand Oil Co., Prechtle 1, 34-3n-70, cemented 4¾-inch at 1951 ft. Essok Oil Co., Martin 1, 5-1s-70, dr below 4245 ft.

ELBERT COUNTY—Belmont Oil Co., Maher 1, 4-6-59, sd at 1350 ft.

FREMONT COUNTY—Fremont Leasing & Holding Co. 1, 2-19-70, fsh for casing, td 2000 ft. Columbia Oil Co., Sheridan 1, 20-18-70, sd at 2240 ft, wtg casing.

HUERFANO COUNTY—Huerfano Oil Co., Oak View 1, 10-29-69, dr below 885 ft.

JACKSON COUNTY—Sievard Oil Co., Hunter 1, 31-11n-7, dr below 2000 ft.

LA PLATA COUNTY—E. B. Klem et al, Ferguson 1, 12-34-7, dr below 1950 ft.

LAS ANIMAS COUNTY—Parker Club, Inc., Adams 1, 32-34-56, water shut off at 2816 ft. Folwy & Goldsworthy, Government 1, 11-30-60, dr below 1725 ft.

LOGAN COUNTY—Northeastern Colorado Oil Co., State 1, 36-8-55, dr below 4790 ft with 6¼-inch at 4540 ft.

MESA COUNTY—B. C. Morrison, Peerless 1, 23-8s-104, sd at 2058 ft.

MOFFAT COUNTY—Ohio Oil Co., Kuykendall 1, 22-21n-11w, dr at 825 ft. Reiter-Foster, State 1, 16-12-100, underreaming at 825 ft, td 875 ft.

RIO BLANCO—Texas Prod. Co., Freeman 1, 27-3-94, dr at 4353 ft.

ROUTT COUNTY — Morrison & Johnson, Hitchins 1, set casing at 2820 ft, resumed drilling to 2840 ft where water broke in.

SAGUACHE COUNTY—Trader Oil, Inc., State 1, 27-41n-10e, fsh at 4300 ft, oil showing.

WELD COUNTY—Platte Valley Pet. Co., Patterson 1, 24-6-61, sd, wtg casing at 3100 ft. Platte Valley Pet. Co., 1, 5-8-56, sd at 250 ft. Reiter Oil Co., Smith 1, 14-1n-66, fsh.

NEW MEXICO

CURRY COUNTY—Hasson Pet. Co. Laird 1, 22-8-36, spd and sd. Frio Oil Co., Saunders 2, 11-5n-35, sdtr lost tools at 1290 ft. Steinberger et al Hoskinson 1, 21-3-35, underream at 1720 ft. Clovis Oil & Gas Co., Hoskinson 1, 21-3n-36, dr below 2510 ft.

CHAVES COUNTY—Gibson Oil Corp. Forsyth 1, 8-11-23, sd at 675 ft. Buffalo-Roswell 1, 24-11-27, sd at 4235 ft. Texas Prod. Co., Wilson 1, 29-17-18, dr below 4480 ft. Twin Mounds Drilling Co., Fahrlander 2, 11-6-27, repairing boiler, td 60 ft. Arena Oil Co., 1, 18-13s-31e, dr below 750 ft.

COLFAX COUNTY—Chico Oil Co., Logan 1, 6-24-25, dr below 1200 ft.

DE BACA COUNTY—Trigg Synd. 1, 27-4n-22, sd at 300 ft. Barber-Woods Oil Co., Woods 1, 6-4-20, sd at 390 ft.

GUADALUPE COUNTY — Hanchett Oil Co. Rutherford 1, 24-8-24, dr below 1755 ft. Union Pet. Co. McMullen 1, 24-5n-16, sd at 235 ft. Navajo Oil Co. Goard 1, 10-3-17, dr at 2110 ft.

McKINLEY COUNTY—Smart & Reid, 7-17-9, bldg. rig. Inland Oil Corp., 1, 22-18-10, underreaming 8¼-inch at 763 ft. S. Dysort 1, 21-14-9, dr below 1350 ft. Continental Oil Co. Garcia 1, sw 9-17n-7w, dr at 665 ft. Reliance Oil Co. Hanchett 1, 15-17-9, dr below 800 ft.

QUAY COUNTY — Midwest Ref. Co. Rhoades 1, 3-18-31, sd at 3650 ft. Gibson Oil Corp. 1, 25-8-32, set 8¼-inch at 3500 ft, td 3502 ft. Ohio Oil Co., Jordan Ridge 1, 24-7-29, dr at 3700 ft.

TORRANCE COUNTY—San Juan O. & G. Co., Minerman 1, 32-7-10, wtg new drilling line at 4182 ft. San Juan O. & G. Co. Randall 2, 20-6-19, dr below 4475 ft. F. G. Wilson, Tr., Pace 1, 12-6-7, sd at 2013 ft. Duran Dome O. Co. Duran 1, 31-2-14, dr below 1315 ft.

SAN JUAN COUNTY—Portage O. & G. Co. 3, 25-31-13, underreaming at 1080 ft; Glade 1, 24-30-13, installing standard rig at 2160 ft. Union Oil & Mining Co. Pine 2, 8-29-9, resuming at 2950 ft. Kansas-Colorado Oil Co.

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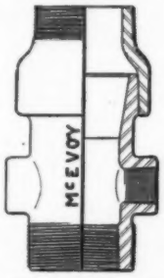
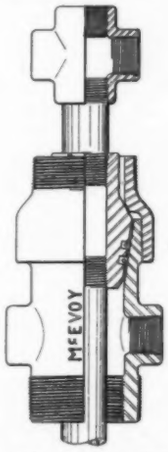
McEvoy Casing and Tubing Control Heads Style B



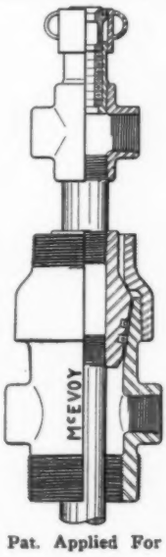
Pat. Applied For

Style B, for Gas Lift



Pat. Applied For

Style B, Pumping



Pat. Applied For

McEvoy Flush Joint Bailer Bail

Pat. Applied For

Adapter

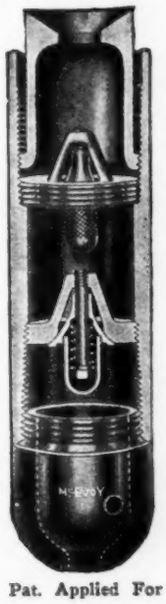
Bailer Bottom

Pat. Applied For

McEvoy "Wireless" Well Strainer

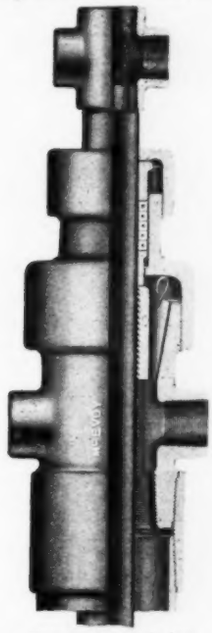
Patented
Also Made in Flush Joint

McEvoy Set Shoe Assembly



Pat. Applied For

McEvoy Casing and Tubing Control Head, Style A, for Gas Lift



Patent Applied for

Style A, Pumping

Patent Applied for

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Say you saw it in The OIL WEEKLY

Aterberry 1, 24-31-11, dr below 1700 ft. Senate Oil Co., Lanier 1, 34-29-11, rigging standard equipment to deepen. San Juan Pet. Co., Palmer 1, wtg new dr line. T. C. U. Oil Co. Lanier 1, 9-29-11, 1½ M gas shut in at 907 ft. Huntington Park Oil Co. 2, 29-30-9, dr below 3260 ft. R. M. Smith, Abrams 2, 23-29-11, spd new hole, 20 ft. Huerfano Oil Co. Wiltbank 1, 25-29-11, dr deeper from 683 ft. Aztec Oil Dev. Co. Finch 1, 15-29-11, dr at 800 ft.

SOCORRO COUNTY—Abo Oil Co., 1A, 14-3s-6e, set 12½-inch at 600 ft and sd to reorganize.

VALENCIA COUNTY—Acme Oil Co. New Mexico-Ariz. Land Co., 26-6-3, dr below 2000 ft. Stone et al, Perrin & Swisher 2, 25-7-2, fsh pipe at 1976 ft.

UNION COUNTY — Sun State Pet. Co., Paso Monte 1, 14-24-30, sd at 2977 ft. Thomas et al Cook 1, dr water well, 410 ft.

WYOMING

CARBON COUNTY—Graybeal Synd., 16-28-1, changing to rotary at 3150 ft. Pacific-American Oil Co. 31-25-91w, lcn.

CONVERSE COUNTY—A. A. Tylee, ne ne 8-32-72, rig. Criterion Oil Co., Irvine, 5-31-70, dr at 3500 ft. John Ackard, McKinley 1, 21-31-69, dr below 3200 ft.

FREMONT COUNTY—Producers & Refiners, Muskrat 1, 34-34-92, dr at 445 ft. Texas Prod. Co., Alkali Butte 1, 1-33-94, spd and sd. Zola Oil Co., Crook's Gap 1, twp 27, range 92, resuming operations, shut down for a year.

JOHNSON COUNTY — Fairway Oil Co., Crazy Woman 1, 7-47-82, set casing on bottom at 1900 ft.

NATRONA COUNTY—North Casper Creek O. & G. Co., se 1-36-82, spd and sd.

NIOBRARA COUNTY—Pennsylvania Western Pet. Co., 13-35n-62w, resuming at 800 ft.

PARK COUNTY — Platte River Drilling Synd., se 12-26-67, dr. Union of California, Taylor 1, 22-47-101, spd at 123 ft. F. G. Ostland, 23-51-102, dr 600 ft.

PLATTE COUNTY—Walter Adams, Trustee, sec 13-25-66, resumed at 1650 ft.

WASHAKIE COUNTY—Producers & Refiners, Tensleep 1, 13-46-89, dr 1285 ft.

WESTON COUNTY — Allen Oil Co. & Olympic Ref. Co., twp 44, range 64, move in material.

EAST TEXAS
Completion

Company, Well and Location	Initial Production Bbls.	Depth
SABINE PARISH—		
Humble, Temple 14, J. Quinalty sur..	* 900	

ANDERSON COUNTY—Brooks et al's Henbry 1, Joseph Mertz sur, dk. Cosden Oil Co.'s Douglas 1, Issack sur, 4010 ft. Humble's Southern Pine B-1, H. Main sur, abn 5080 ft; Southern Pine 1-A, Morton sur, abn 5006 ft; Russell 1, Nancy Cannon sur, rig; Spencer Clemens 2, Beason sur, rig.

CASS COUNTY—Mid Kansas O. & G. Co.'s Rodgers 1, Cass County School lands sur, set 10-inch at 200 ft.

CAMP COUNTY—J. C. Rogers' Boyd 1, R. M. Montgomery sur, rig.

CHEROKEE COUNTY—Humble's Elliott 2, M. Windsor sur, rig; Ragsdale 2, N. Johnson sur, fsh 4564 ft; Reynolds Mortgage Co. 2, J. Durst sur, dr 3185 ft. Magnolia's Summers Est. 1, W. Brewer sur, coring 4339 ft. Panhandle Oil Co.'s Whalen 1, J. Jordan sur, sd 550 ft. Woodmanse Synd.'s Hall 2, J. Durst sur, sd 800 ft.

HENDERSON COUNTY—Cayton et al's Hoffer & Nash 1, H. Jefferson sur, sd 2910 ft.

HARRISON COUNTY—J. R. Bahan's Hickman 2, lcn not checked, set 6-inch at 1620 ft; Furrh 3, J. Short sur, set 10-inch at 40 ft. Cox et al's Clark 1, Joel Lipscomb sur, rig. Clark et al's Furrh 1, J. Short sur, set 6-inch 1910 ft; Furrh 2, J. Short sur, set 4½-inch at 1940 ft; Furrh 3, J. Short sur, set 10-inch at 44 ft. C. H. Lyons' Bryson 1, T. D. Wilson sur, sd 1950 ft. Magnolia Pet. Co.'s Anderson 1, J. Womack sur, dr 1338 ft; Trosper 2, J. H. Harrison sur, coring 2850 ft; Trosper 4, J. H. Harrison sur, dk. State Line O. & G. Co.'s Abney 4, E. Little sur, testing 1936 ft; Taylor 3, T. D. Wilson sur, set 10-inch at 87 ft. Tylong O. & G. Co.'s Cook 2, R. W. Bedford sur, set 6-inch at 1930 ft.

KAUFMAN COUNTY—Cranfield et al's Nicholson 1, A. Bennett sur, testing 3250 ft.

MARION COUNTY—William Gross' Baker 1, J. French sur, dr 1650 ft.

NACOGDOCHES COUNTY—Stein & Lewis' Birdwell 1, Jose A. Chirino sur, sd 1100 ft.

PANOLA COUNTY—Magnolia's Jernigan 2, Jane Thorpe sur, dk; Baker 2, B. C. Jordan sur, rig; Lewis 6, B. C. Jordan sur, wosr 1998 ft; Lewis 7, Jas. Johnson sur, set 10-inch at 109 ft; S. Davenport 2, Jessee Dunlop sur, dr 278 ft; Trosper 1, J. Shandoin sur, set 8¼-inch 1020 ft.

RUSK COUNTY—C. M. Joiner et al's Bradford 1, K. Kimenes sur, sd 500 ft. Magnolia Pet. Co.'s Durren 1, Agulla Norris sur, dk. McCurrie et al's Sparks 1, Jessee Coarse sur, sd 2148 ft. Rusk Dev. Co.'s Matthews 1, D. Cortinas sur, sd 2330 ft. The Texas Co.'s Schultz 1, A. Loffton sur, dr 1607 ft.

SMITH COUNTY—Dr. Gaither's Parker 1, Don Thomas Quevedo sur, sd 3000 ft.

SHELBY COUNTY— Magnolia's Pickering Lbr. Co. 1, Wm. J. Crane sur, dr plug 2637 ft. W. M. Sebastian's Pickering Lbr. Co. 1, T. F. Polly sur, sd 2830 ft.

SABINE COUNTY—Crater Oil Co.'s Mills 2, Anthony Shoals sur, sd 2000 ft. Humble's Temple 15, A. J. Lott sur, dr 106 ft.

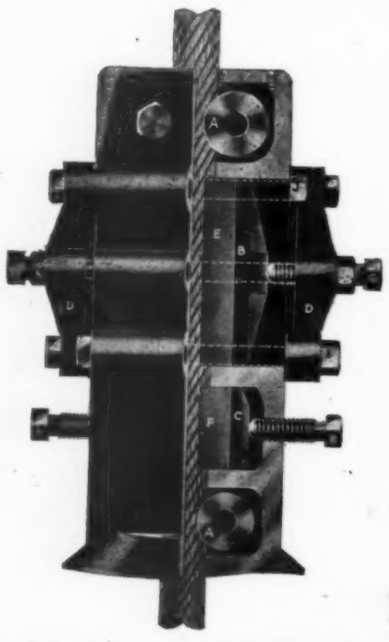
UPSHUR COUNTY—S. W. Richardson's Newsome et al 1, A. Butler sur, sd 2025 ft; Minor 1, A. Lowery sur, co with cable tools 3500 ft.

WEST TEXAS
Completions

Company, Well and Location	Initial Production Bbls.	Depth
GLASSCOCK COUNTY—		
Frank M. Greene Corp., Oxshear 1,	*	3661
Landreth Prod. Corp., Houston 1..	*	3845
KING COUNTY—		
Sinclair Oil & Gas Co., Burnett 1	*	3509
TAYLOR COUNTY—		
Morrison-Thompson et al, Rose 1..	*	2651

ANDREWS COUNTY — Carter-Zweifel et al's Cowden 1, elev. 3136 ft, top salt 1575 ft,

The Huffman Double Packed Double Roller Oil Saver



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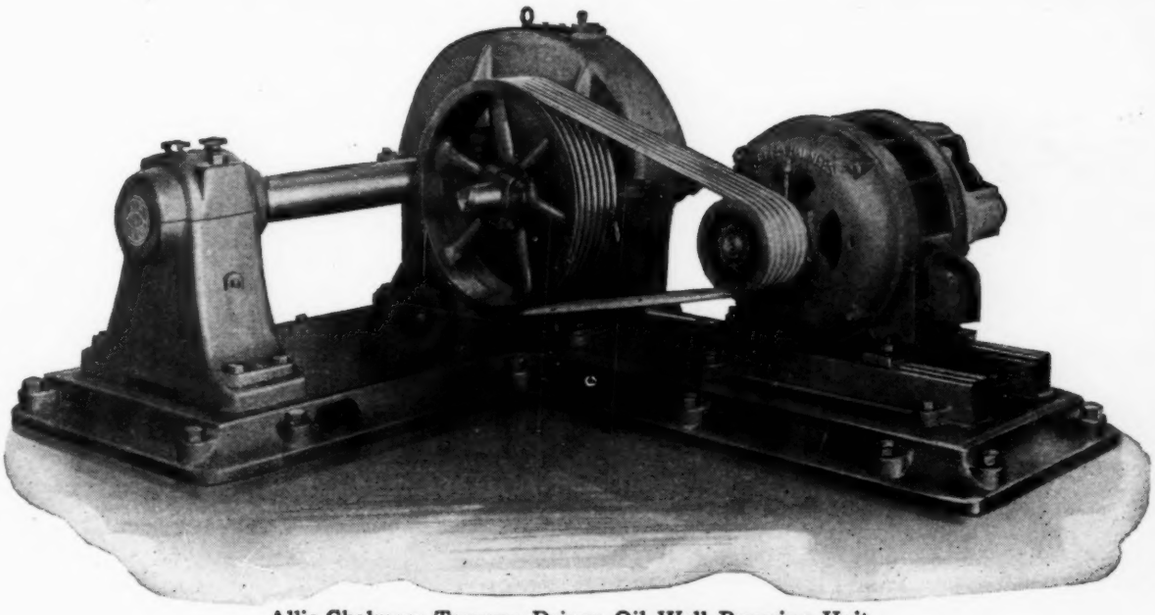

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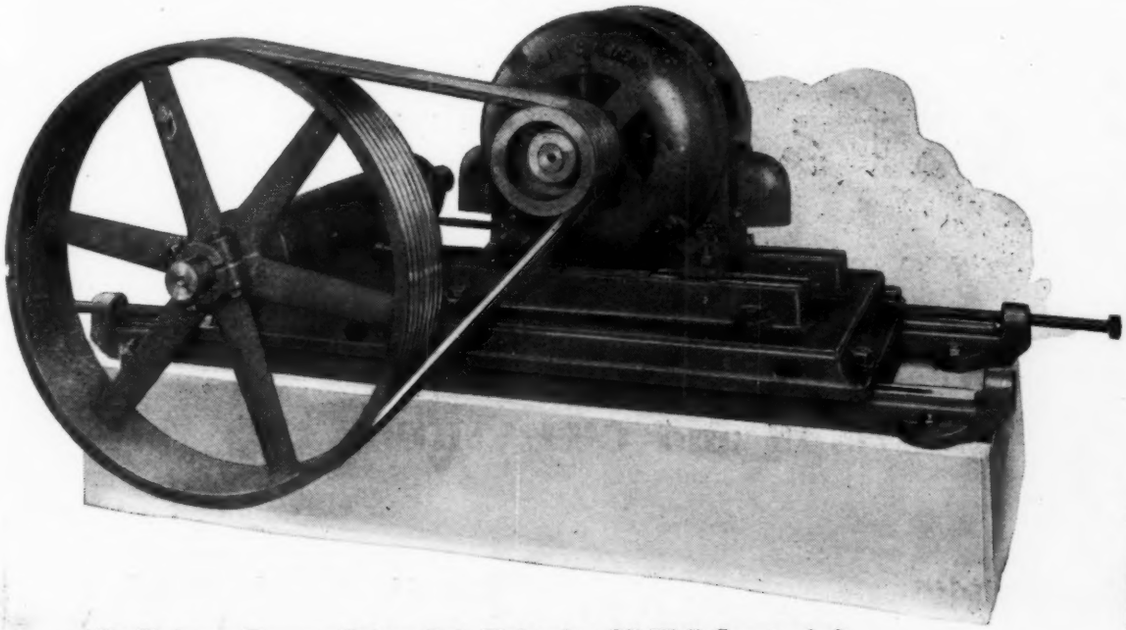

Allis-Chalmers Texrope Driven Belt Tightening Oil Well Countershaft

dr 3695 ft. J. S. Cosden et al's Bedford-Ratliff 1, dr 690 ft. Geo. Calvin & Belt et al's Bedford-Ratliff 1, sd 350 ft. Deep Rock Oil Co. et al's W. J. Harris 1, elev. 3173 ft, dr 1980 ft. C. B. McKennon et al's J. S. Means 1, sd 1030 ft.

BREWSTER COUNTY—Van McPhail et al's McIntyre 1, fsh 1020 ft. Mid-Kansas O. & G. Co.'s W. W. Turney 1, rig. Wilcox-Anderson et al's Gage 1, dr 970 ft.

COKE COUNTY—W. H. Brown et al's Foster 1, dr 1505 ft. Danciger O. & R. Co.'s Byrne 1, dr 1760 ft. Lipan Oil Co.'s Conner 1, sd 1215 ft; Rawlings 1, (dd) cem 6-inch cas 2736 ft.

CONCHO COUNTY—The Exploration Co.'s Hartgrove 1-A, machine.

CRANE COUNTY—Marland Oil Co.'s Cordova Union Fee 1, ur 825 ft.

CROCKETT COUNTY—Geo. H. Anderson-McGinley & Marland Oil Co.'s University 1, elev 2666 ft, top salt 1185 ft, top lime 2142 ft, sd in water 2475 ft. Blackwell O. & G. Co.'s (was Williams et al) Powell 2, elev 2747 ft, top salt 1055 ft, swabbed 60 bbls 8 hrs, 2598-2627 ft. V. T. Bolin & Co.'s Coates 1, sd 2110 ft. Corbett & Gill's University 1, sd 640 ft. W. W. Donnelly-Young et al's Pierce 1, elev. 2105 ft, dr 1685 ft; Massie 1, spud and sd; Shannon 1, dr 510 ft. Epenauer et al's Noelke 1, dr 355 ft. Gulf Prod. Co.'s Powell 2-D, top salt 1060 ft, dr by boulder 2345 ft; Thompson 1, top lime 980 ft, flowing 990 bbls oil and sulphur water 988 ft; Thompson 2, machine. Geo. A. Henshaw-Geyer & Marland's Noelke-Murphy 1, elev 2334 ft, dr 1400 ft. James Kelly et al's Todd 1, sd 640 ft. C. A. Jones et al's Powell 1, dr 360 ft. McMannon Oil Co.'s Blakeney 1, dr 750 ft. Newman Oil Co.'s Clark 1, lcn. Wm. Shaffer et al's University 2, elev 2666 ft, top salt 1060 ft, dr 2365 ft. Taylor-Link Oil Co. et al's Powell 1, elec 2735 ft, top salt 1050 ft, top lime 2489 ft, swabbed 290 bbls oil 12 hrs, 2572-94 ft. World Oil Co.'s Sorg 1, lcn; Powell 1, lcn.

CULBERSON COUNTY—James H. Gardner et al's Radford 1, sd 585 ft.

JEFF DAVIS COUNTY—J. K. Hughes Dev. Co.'s Means 2, dr 865 ft. Humble O. & R. Co.'s C. Flores 1-A, dr 525 ft.

DAWSON COUNTY—R. R. Penn's Wright 1, elev 2842 ft, top salt 1750 ft, dr 3195 ft.

ECTOR COUNTY—J. S. Cosden & The Texas Co.'s Connell 2-A, sd 3515 ft; Connell 3-A, sd 3545 ft.

FISHER COUNTY—Hucony Oil Co. et al's Langford 1, dr 3375 ft. Marland Oil Co. & Miley Oil Corp.'s Ammons 1, dr 3575 ft. Sinclair O. & G. Co.'s Farmer-Denise 1, dr hfw 2835 ft. The Texas Co.'s Stephens 1, sd 2302 ft.

GAINES COUNTY—Westheimer & Daube's Forbes 1, dr 3985 ft.

GLASSCOCK COUNTY — The California Co.'s W. B. Currie 1, elev 2694 ft, dr 2310 ft. Magnolia Pet. Co.'s Roberts 1, dr 1165 ft. World Oil Co. et al's McDowell 1, elev 2545 ft, top salt 1180 ft, set 6-inch cas 3515 ft.

TOM GREEN COUNTY—Fitzgerald & Taliaferro's Bennett 1, sd 1250 ft.

HOCKLEY COUNTY—World Oil Co.'s Ellwood 1, sd 400 ft.

HOWARD COUNTY—The California Co.'s Fisher 1, dr 900 ft. W. W. Donnelly-Mann & Freel's Martin 1, elev 2552 ft, top salt 960 ft, dr 2785 ft. F-H-E Oil Co. et al's Roberts 1-B, sd 1915 ft. Geo. A. Henshaw, Jr., & Co.'s Eason 1, show oil 1720-25 ft, dr 1805 ft; W. R. Settles 1, dr 1215 ft. L. C. Harrison et al's Roberts 3, rig. Magnolia Pet. Co.'s Mary-Chalk 6, dr 1445 ft; Mary-Chalk 7, testing oil sand 1651-75 ft; Kelly-Chalk 2, dr 805 ft; Kelly-Chalk 7, dr 810 ft; Kelly-Chalk 8, dr 175 ft; Sloan-Chalk 5, dr 1305 ft. Marland Oil Co.'s Clay 1-E, showing oil, dr 1775 ft; Jones 1, sd 500 ft; A. M. Fisher 1, elev 2740 ft, dr 3005 ft; A. G. Haynes 1, top salt 1135 ft, dr 2345 ft. Marland & Texon Oil & Land Co.'s Guitar 1-A, dr 430 ft; Connelly 1, dr 390 ft; Quinn 1, top salt 1190 ft, top lime 3215 ft, dr in oil pay 3330-55 ft. Mays-Nixon & Flowers' Flowers 1, lcn. Peer Oil Corp.'s C. D. Read 1, fsh 525 ft. Sweeney et al's Chalk 1, lcn; Chalk 2, co 1040 ft. Vitex Oil Co.'s Clay 1, sd 1450 ft.

HUDSPETH COUNTY—Lockhart & Co.'s Moore 1, rig.

JONES COUNTY—E. P. Campbell et al's Herndon 1, sd 3009 ft. R. F. Garland & Co.'s Glynn 1, dr 1930 ft. Gibson-Johnson et al's Joe Dillard 1, dr 915 ft. Hutson & Weaver's Smith 1-A, sd 800 ft. W. G. Stough et al's Willis 1, sd 1740 ft. Swensondale Oil Co.'s Canton 1, sd 2505 ft.

KING COUNTY — The California Co.'s Spikes 1, elev 1719 ft, ur 3015 ft. Gibson-Johnson et al's Burnett 1, elev 1715 ft, dr 3490 ft. Humble O. & R. Co.'s Pitchfork 1, dr 485 ft. Mid-West Exploration Co.'s Patton 1, elev 1706 ft, dr by cas 3002 ft. Pattison et al's Patton 1, elev 1616 ft, sd 2670 ft. White Eagle O. & R. Co.'s Burnett 1, elev 1818 ft, sd 3440 ft.

LOVING COUNTY — Kingwood Oil Co.'s Moore 1, elev 3120 ft, top salt 1210 ft, dr 4380 ft. Owen-Sloan et al's Johnson 1, elev 2934 ft, sd 930 ft.

LYNN COUNTY—Elpo Oil Co.'s Nevels 1, dr 130 ft.

MIDLAND COUNTY — Orbit Oil Co.'s Moreland 1, sd 150 ft.

MITCHELL COUNTY—Thraves Oil Corp.'s C. Way 1, elev 2126 ft, top lime 2140 ft, fsh 2509 ft. Thaves & Tex-O-Kan Oil Co.'s W. F. Sanders 1, elev 2253 ft, top lime 2245 ft, dr 3140 ft.

NOLAN COUNTY—John Winemiller Corp.'s Booth 1, sd 3212 ft. Henry Zweifel et al's Longbotham-Neal 1, elev 2528 ft, sd 3009 ft.

PECOS COUNTY—Allsman-Bell et al's River Bed 3, lcn. Geo. Anderson et al's Sherbino 1, materials; McKenzie 1, ur 615 ft. Buell-Hagen et al's Batchelor 1, elev 3136 ft, sd 2820 ft; Jasper 1, elev 3307 ft, top salt 1527 ft, dr 2130 ft. The California Co.'s Smith 1, fsh 630 ft; Smith 2, rig; Yates 3, dr 285 ft; Yates 4 and 5, rigs. Diamond Pet. Co.s

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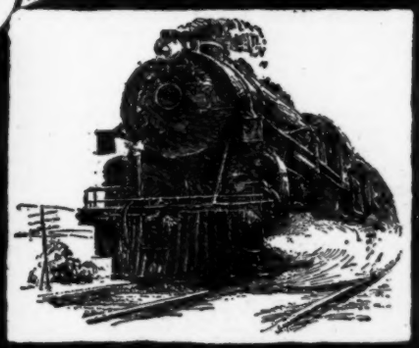

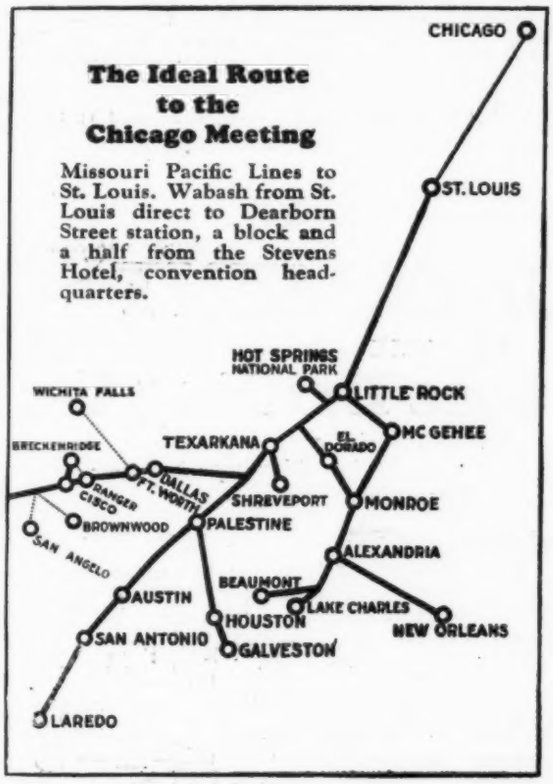

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Lv. Dallas	5:10 pm	Lv. Beaumont (M. P. L.)	1:00 pm
Lv. Shreveport	7:50 pm	Lv. Alexandria	6:10 pm
Lv. Laredo (I. G. N.)	11:30 pm	Lv. Monroe	8:55 pm
Lv. San Antonio	9:00 am	Ar. St. Louis	11:15 am
Lv. Austin	11:10 am	Ar. Chicago (Wab.)	6:50 pm

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Blackstone-Slaughter 1, lcn. T. R. Cowell et al's J. C. Trees 1, elev 2545 ft, top salt 2305 ft, sd 3460 ft. M. C. Dibble et al's Bonebrake 1, co 560 ft. Douglas Oil Co.'s Sellman 1, dr 100 ft. Bob Elmore et al's Manly Holmes 1, elev 2176 ft, top salt 335 ft, sd 1825 ft. R. F. Garland & Co.'s El Paso Fee 1, elev 3264 ft, top lime 1950 ft, ur 2645 ft. Gulf Prod. Co.'s M. A. Smith 1, top lime 1199 ft, dr oil pay 1256-82 ft. Geo. A. Henshaw & Co.'s Corder 1, lcn; Sweatt-Hinyard 1, dr 430 ft. Humble O. & R. Co.'s Smith 1, cem 8¼ cas 940 ft. Kirby Pet. Co.'s W. W. Turney 1, lcn. Marland & McMan O. & G. Co.'s Yates 2, fsh 555 ft; Yates 3, dr 830 ft; Yates 4, dr 845 ft; Yates 5, dr 520 ft; Yates 6, dr 745 ft. Madza & Savoy Oil Co.'s Smith 1, set 10-inch cas 655 ft; Smith 2, lcn. Mid-Kansas & Transcontinental's Smith 1, sd 120 ft; Smith-Taylor 2, sd 550 ft; Smith-Taylor 3, lcn; Yates 8-A, dr 330 ft; Yates 4-B, machine. Moody Corp.'s Corder 1, lcn. Olean Pet. Co.'s G. A. Harral 1, sr 675 ft. Red Bank Oil Co.'s Smith 2, lcn; McKenzie 1, elev 3279 ft, dr 3430 ft. Roxana Pet. Corp.'s Smith 1-A, fsh 595 ft; Tippett 1, fsh 650 ft. W. R. Shankel et al's Yates 1, sd 1479 ft. Simms Oil Co.'s Devline 2, showing sulphur water 1130 ft; Smith 1, dr 1125 ft. Transcontinental Oil Co.'s Blackstone-Slaughter 1, dr 960 ft. World Oil Co.'s Kloh 1, materials.

PRESIDIO COUNTY—Hadlock & Miller et al's Tootle 1, sd 2910 ft. Pinto Canyon Oil Co.'s Fields 1, lcn.

REEVES COUNTY—D. R. Thompson et al's Eddins 1, fsh 1145 ft. World Oil Co.'s Duff 1-A, elev 2753 ft, top salt 1940 ft, dr 4050 ft.

RUNNELS COUNTY—Ed Hill-Ladd-Dutton-Sillix's R. M. McMillan 1, flowing by heads, set 5-inch cas with packer 2545 ft. Alsworth et al's E. A. Werner 1, lcn. Kennedy et al's J. E. Talley 1, rig. Owenwood Oil Corp.'s H. B. Fowler 1, lcn. Noble O. & G. Co.'s Simms 1, fsh 2100 ft. Miles Oil Co.'s L. S. Lawhon 1, dr 530 ft.

SCHLEICHER COUNTY—Thos. Gray et al's Robinson 1, fsh 2475 ft.

STERLING COUNTY—P. H. Williams et al's Clark 3, dr 1120 ft.

STONEWALL COUNTY—Peer Oil Corp. & Producers Oil Co.'s R. P. Morrow 1, dr 2285 ft.

TAYLOR COUNTY — A. J. Brown Prod. Co.'s Henslee 1-A, elev 2010 ft, dr 2140 ft. Owen-Sloan et al's Latimer 1, sr 2610 ft. Roeser-Pendleton Inc.'s Sam Butman 1, dr 2440 ft.

TERRELL COUNTY—W. W. Donnelly & Big Bend Oil Co.'s Bassett 1, lcn.

UPTON COUNTY—J. M. Hickey et al's Gormley 1, elev 2358 ft, top salt 472 ft, set cas on lime 1775 ft. Curtis-Hults et al's Giddings 2, spd and sd. Wise & Jackson's Porter 1, elev 2589 ft, top salt 1370 ft, top lime 3349 ft, sd after shot 3517 ft.

VAL VERDE COUNTY—Douglas Oil Co.'s Sellars 1, sd 3010 ft. Magnolia Pet. Co.'s Whiteside 1, dr 3725 ft. S. A. McCaskey's Sellars 1, sd 3503 ft. O. O. Owens et al's Henry Mills 1, sd 2801 ft. E. T. Williams et al's Holman-McNutt 1, sd 2940 ft.

WINKLER COUNTY—Amerada Pet. Corp.'s J. M. Walton 1, dk. Atlantic Oil Prod. Co.'s Grisham-Hunter 1, sd storage 2522 ft; Ida Hendricks 1, dr 665 ft. Arizona Mining & Eng. Co.'s Hendricks 1, spd and sd. Cranfill Bros. Oil Co.'s Bashara 1, dr 320 ft. Cranfill-Reynolds et al's Ida Hendricks 1, top salt 1290 ft, cem 8¼ cas and stdz 2247 ft; Hendricks 2, rig. Gulf Prod. Co.'s Hendricks 2, rig; Hendricks 3, sd storage 2597 ft; Hendricks 4, sd storage 2658 ft; Hendricks 5, sd storage 4505 ft; Hendricks 6, sd storage 2556 ft; Hendricks 7, sd storage 2520 ft. Ed. S. Hill-Ladd & Tidal Oil Co.'s Amburgey 1, dr 4120 ft. Humble O. & R. Co.'s Grisham-Hunter 1, top salt 1480 ft, sd storage 2756 ft; Grisham-Hunter 2, cem 8¼ cas 2230 ft; Hendricks 1, (sec 36) top salt 2120 ft, set 6-inch cas in anhydrite 2500 ft. Independnent O. & G. Co.'s Grisham-Hunter 1, sd storage 2601 ft; Grisham-Hunter 2, sd storage 2504 ft; Hendricks 1-B, (sec 44) dr 385 ft. Landreth Prod. Corp.'s Grisham-Hunter 1, elev 2838 ft, top salt 1884 ft, top lime 2560 ft and cem 6-inch cas to stdz; Grisham-Hunter 2, dr 1275 ft; Ida Hendricks 1-A, dr 1365 ft. Liner Drilling Co. and Ryan's Campbell 1, rotary rig. Llano Oil Co. et al's Scarborough 1, sd 3447 ft. R. S. Matthews et al's Cowden 1-A, elev 3120 ft, top salt 1623 ft, sd 3500 ft. Marland Oil Co.'s Hendricks 1, lcn; Hendricks 2 and 3, rigs; Hendricks 4, lcn. Joe Maxwell & L. C. Turman's Hendricks 1, lcn; Hendricks 2, rig. Murchison-Cranfill & Marland's Grisham-Hunter 2 and 3, rigs; Grisham-Hunter 4, lcn. Murchison & Cranfill's Grisham-Hunter 1-B, rig. Pure Oil Co.'s Grisham-Hunter 2, sd storage 2680 ft; Grisham-Hunter 1-B, (sec 34), elev 2827 ft, top salt 1395 ft, top lime 2276 ft, sd storage 2284 ft; Grisham-Hunter 2-B, dr 685 ft; Grisham-Hunter 3-B, lcn. Republic Prod. Co.'s Grisham-Hunter 1-A, (sec 45) dr 875 ft; Grisham-Hunter 1-B, (sec 41) top salt 1300 ft, dr 1480 ft. Roxana Pet. Corp.'s Grisham-Hunter 1-A, (sec 45) dr 1505 ft; Ida Hendricks 1-B, (sec 29) top salt 1330 ft, dr 1770 ft. Southern Crude Oil Purchasing Co.'s Hendricks 2-B-T-88, (sec 4) rotary rig; Grisham-Hunter 1-A-T-89, (sec 35) elev 2817 ft, top salt 1219 ft, top lime 2298 ft, crooked hole 2340 ft; Hendricks 3-C, sd storage 2735 ft; Hendricks 4-C, sd storage 2740 ft; Hendricks 1-F, (sec 33), sd storage 2529 ft; Hendricks 1-A-3-T-67, (sec 4) elev 2784 ft, top salt 1540 ft, top lime 2617 ft, sd storage 2619 ft; Hendricks 2-A-3-T-67, (sec 4) rig; Hendricks 1-B-T-67, (sec 44) dr 1545 ft; Hendricks 1-C-T-88, (sec 28) top salt 1255 ft, dr 1675 ft; Grisham-Hunter 3-A-T-68, to psalt 1365 ft, top lime 2308 ft, cem 6-inch cas 2313 ft. Texon Oil & Land Co.'s Grisham-Hunter 1-A, sd selling gas 2814 ft; Grisham-Hunter 2-A, dr 345 ft; Grisham-Hunter 1-B, (sec 45) cas trouble 150 ft; Grisham-Hunter 2-B, rig. White Eagle O. & R. Co. et al's Leck-Collins 1, dr 1975 ft.

TEXAS GULF COAST

Company, Well and Location	Completion Initial Production Bbls.	Depth
MATAGORDA COUNTY—		
Rycade & Houston Gulf Gas Co., Sisk 2	*	2376

AUSTIN COUNTY—Humble's Gotoskey 1, Racoon Bend, water sand 1114 ft.

BRAZORIA COUNTY—Roxana's Pabst 2-A, Clemens Dome, fsh 6319 ft. Roxana's Allen

OIL WELL ALCO TOOLS TRADEMARK REG.

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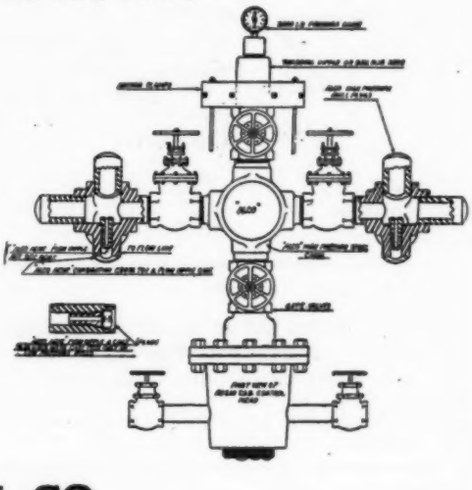

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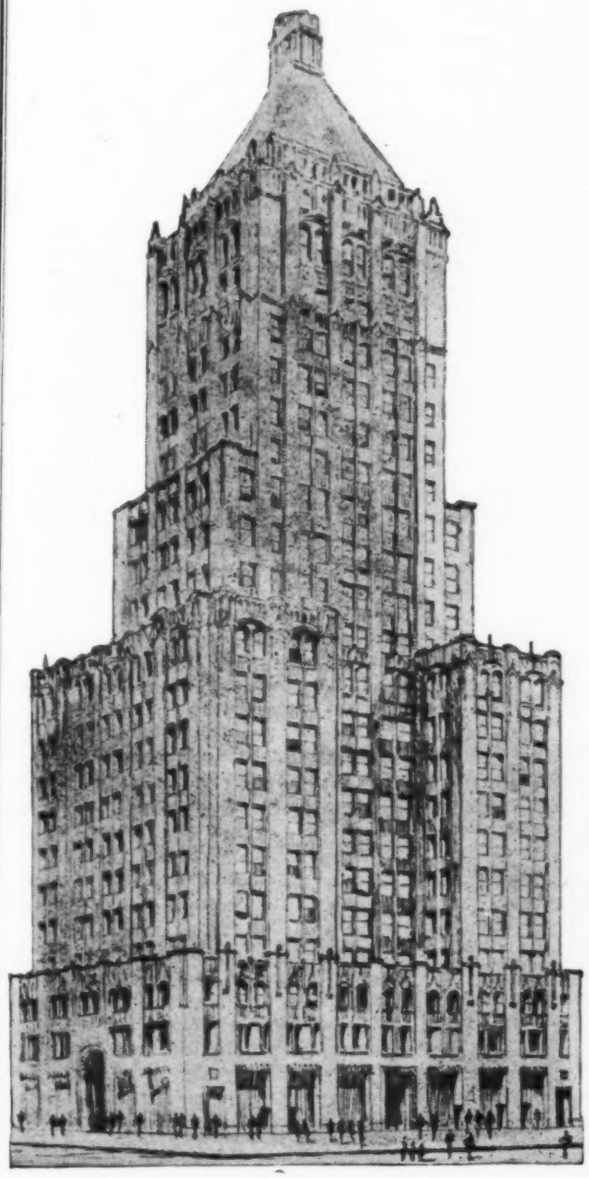

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Manufactured for All Makes of Slush Pumps

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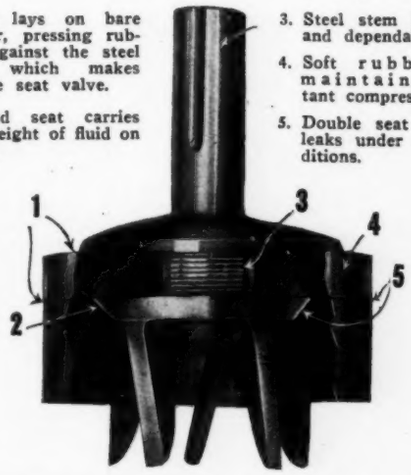

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A cordial welcome awaits you.

Mr. H. B. Burlow will be in charge.

Templeton, Kenly & Co., Ltd.

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Chicago, Ill., U. S. A.

Bernard River 1, Allen Dome, sd for control head; Allen 4, Allen Dome, dr 5120 ft sticky shale; Randon 1, Allen Dome, waiting on orders. Danscinger Oil Co.'s Bartlett 1, 3 miles w West Columbia, lcn. Pure-Humphreys' Armstrong 1, Stratton Ridge, will abandon, 4421 ft. Gulf's Perry, 3 miles Stratton Ridge, lcn.

FORT BEND COUNTY—Gulf's Trone 4, Long Point, dr 1181 ft shale. Sun's Kasparek 1, dr 1207 ft shale; Farmer 3, dr 2365 ft shale. Gulf's Beard 1-A, Long Point, dr 2982 ft hard sand.

HARRIS COUNTY—Dr. P. S. Griffith's Fee 2, 12 miles n Houston, sd 3517 ft. Juanita Oil Co.'s Kitsman 1, 3 miles n Cypress, sd 1175 ft. Humble-Marland's Warren 1, Hockley, dr 4149 ft.

JEFFERSON COUNTY—Beaumont Oil & Prospecting Co.'s Tyrell 1, 3 miles nw of Beaumont, dr 3112 ft hard sand, no show. J. O. Davis & Kinnear's Gladys 1, Spindle Top, dr 4892 ft gumbo. So. Spindle Top O. & Dev. Co.'s Young 1, 1 mile w Nederland, temp. abn. 1653 ft. Jim McMurry's Crosby 1, 5 miles ne Port Arthur, dr 2020 sandy shale.

LIBERTY COUNTY—Harrison Oil Co.'s Quintette 1, N. Dayton, dr 2570 ft gbo. Judge Titwell et al's Gardner 1, 5 miles e Davis Hill, sd 3508 ft.

MATAGORDA COUNTY—Gulf's Sanborn 3, Hawkinsville, dr 4563 ft hard sand. Matagorda County Dev. Co.'s Hawkins 1, Bay City, dr 1985 ft shale and lime. Rycade & Houston Gulf Gas Co.'s Sisk 2, Markham, abn 2376 ft.

MONTGOMERY COUNTY—Blain et al's Fitch A-1, 3 miles e Spring, dr 2265 ft, gbo, shale, lime, sand.

WHARTON COUNTY—Ingram Prospecting Co.'s Mensing 1, Boling, dr 1085 ft, sandy shale.

SOUTH LOUISIANA

Completions

Company, Well and Location	Initial Production Bbls.	Depth
CAMERON PARISH—		
La. Land & xplo. Co., Mallard Bay 1	*	3518
IBERIA PARISH—		
La. Land & Explo. Co., Vermillion Bay 1	*	3214

ACADIA PARISH— — Yount-Lee Oil Co.'s Houssiere-Latrielle 1, Jennings, 2698 ft, cap rock.

CALCASIEU PARISH—Dr. Hintze's Beckenstein 2, Sulphur Dome, sd 4260 ft. Union Sulphur Co.'s Fee 721, Sulphur Dome, dr 3175 ft hard sand. Newton Dev. Co.'s Dupre 1, Lake Charles, sd 1240 ft.

CAMERON PARISH—Pure Oil Co.'s Sweet Lake 4, Sweet Lake, set strainer, will run liner, 5141 ft; Sweet Lake 5, Sweet Lake, coring sand 5120 ft. La. Land & Explo. Co.'s Mallard Bay 1, abn.

JEFF DAVIS PARISH—Estropal Oil Co.'s Le Doux 2, sd 2980 ft.

IBERIA PARISH — Calcasieu Oil Co.'s Schwing A-1, Eagle Point, dr 3415 ft sand rock. La. Land & Explo. Co.'s Vermillion Bay 1, abn 3214 ft.

LA FOURCHE PARISH — Gulf's Dibert-Stark-Brown, Thibodaux, reaming 351 ft.

ST. MARY PARISH—La. Land & Explo. Co.'s Grand Lake 1, sd 4886 ft; West Cote Blanche 1, dr 1913 ft.

ST. MARTIN'S PARISH—Rycade's Atchafalaya 1, dr 3843 ft hard sandy shale.

SOUTHWEST TEXAS

Completion

Company, Well and Location	Initial Production Bbls.	Depth
WEBB COUNTY—		
Magnolia, Yeager Strohman 1....	¶40	2103

BROOKS COUNTY—The Texas Co.'s Lasater 3, Gyp Hill, dr 3914 ft, shale and gbo.

CALDWELL COUNTY—Sutton & Smith's Carter 1, 4 miles ne Luling, temp abn, 2610 ft. Carter 2, lcn. Radcliff et al's New 1, 7 miles ne Luling, dr 2880 ft.

DUVAL COUNTY—Breen Woodward et al's Dinn 1, lcn. Schlissinger et al's Moody 1, sd 2399 ft.

HIDALGO COUNTY—Queen City O. & G. Co.'s American Land & Drilling & Irrig. Co., 1, n Mercedes, fsh. Dale Smith's Daskan 1, temp abn, 2107 ft.

JIM HOGG COUNTY — Paesana Synd.'s Campbell 1, 8 miles se Hebbronville, coring 1465 ft. Hale et al's Jones 1, sd 2500 ft. Smi-Lock Oil Co.'s Martinez 1, rigging up.

MAVERICK COUNTY—Rycade's Sullivan 1, dr 5115 ft shale; Chittim 1, fsh 5630 ft; Chittim 2, dr 440 ft. Ryan Consolidated's India Land Co. 1, 24 miles se Eagle Pass, fsh 2385 ft.

SAN PATRICIO COUNTY — Connors Walsh's Oben 1, White Point, dr 1560 ft gbo. Mission Drlg. Co.'s Harwood 1, White Point, dr 1060 ft gbo. National Oil Co.'s Jno. McMullen sur 197 ac tr, set 10-inch csg at 280 ft. J. E. Garrett's Fee 1, 1 mile s Gregory, 10-inch csg at 400 ft. Houston Oil Co.'s Humble Fee 2, White Point, dk; Humble Fee 3, White Point, dk.

STARR COUNTY—Deckle & McCarley's Garcia 1, temp abn, 1098 ft. T. G. Folz's Salinas 1, temp abn.

VAL VERDE COUNTY—East Del Rio's Weatherbee 1, no report. Owens et al's Mills 1, standing 2801 ft. Magnolia's Whitehead 1, sd 3570 ft.

WEBB COUNTY—Trussel et al's Bruni 1, dr 1530 ft shale.

Freeport Starts Sulphur Development at Big Hill

Houston.—The Texas Exploration Company and the Freeport Sulphur Company closed a deal last week in accordance with which the latter will immediately begin prospecting and developing the Big Hill dome in Jefferson County for sulphur. Just after the deal was made, the Freeport company started unloading four cars of drilling and camp equipment, and an intensive drilling program was scheduled.

The area on which the sulphur rights were acquired comprises 675 acres held in fee by the Texas Exploration Company, the tract practically covering all of the Big Hill dome, which is 16 miles southeast of Spindle Top. Big Hill is on the Gulf and Interstate branch of the Santa Fe between Beaumont and Galveston.

There has been drilling at Big Hill for oil since the early days of Spindle Top, the dome closely resembling that of Spindletop, although a little larger, but no oil production has been found. Within recent years the Houston Oil Company has drilled for oil on outside areas, where some showings were encountered. And the Texas Exploration Company has drilled several tests which indicated that the dome is primarily a sulphur proposition.

Drilling Deeper in Tests In Rincon District

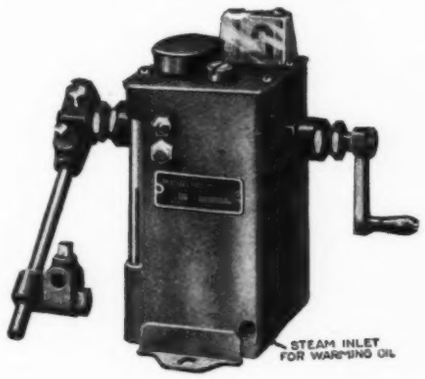
Rincon, Calif.—The Chanslos-Canfield Midway Oil Company has temporarily abandoned hope of production at the old levels in Hobson 1A and 1B in the Rincon district and is drilling both wells deeper. Hobson 1A was given a chance to make good at 6525 feet but failed. Hobson 1B was tested at 4900 feet and 4300 feet but water played havoc. Several hundred feet of promising oil sand was cut and the absence of commercial production was a disappointment. Hobson 1A is now drill-

"MANZEL" Force Feed Lubricators

For Every Oil Field Service

Model "XD"

For Steam Engines and Pumps, Air and Gas Compressors, Etc.



In every important oil field you will find "Manzel" Model "XD" Force Feed Lubricators lubricating the great majority of the engines, pumps and compressors, and doing the job most efficiently, too.

Simple in design, easy to operate and positive always, they have everywhere won the approval of operators who have learned through actual experience of their unfailing reliability under the exacting requirements of oil field service.

Being entirely automatic in action, they require no attention, but start, stop, speed up and slow down with the engine, always supplying the exact amount of oil needed—no more and no less.

"Manzel" Model "XD" lubricators save enough oil in a short time to pay for themselves, but what is even more important, they save the engine cylinders, prevent costly shut-downs due to lubrication troubles, and eliminate repair bills.

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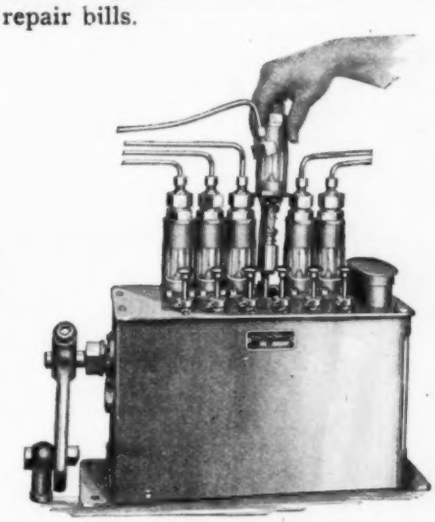
For Timed Lubrication of Diesel Engines



This model has been designed especially for Diesel Engine use and will deliver the oil directly onto the piston between the rings, at the end of the working stroke, or any other pre-determined time or place.

By proper timing of the delivery of oil into the cylinders, the efficiency of your engines will be greatly increased; wear on the pistons and cylinders reduced to a minimum; and carbon trouble, due to excess use of cylinder oil, eliminated.

Class "XW"

For Oil and Gas Engines

For lubricating the bearings, as well as the cylinders of all kinds of oil field gas and oil engines.

Measure out the oil to each point just as it is needed without wasting a drop. After being adjusted to meet the needs of the engine, require no further attention, except to keep the reservoir supplied with oil.

Easily installed on all makes of engines.

Complete fittings for installing can be furnished, if desired, for most of the different types of engines used in the oil fields.

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PERMITS GRANTED FOR NEW WELLS

WEEKLY COMPARISON OF NEW WELLS

Following is a condensed table giving a comparison of permits or locations made for new wells during the past year in Kansas, Oklahoma, Arkansas, Louisiana, Texas, California and the Mountain States:

	Week Ending Sept. 16	Previous Week	Total This Month	Total This Year	This Week Last Year	This Month 1926	Total Same Date 1926	Year Total 1926
Arkansas	4	7	17	266	24	56	904	910
California	13	21	54	947	25	99	1,096	1,293
Louisiana	21	14	49	520	34	88	990	1,318
Kansas	10	14	45	722	14	71	1,456	1,745
Oklahoma	44	54	183	2,989	116	316	4,083	5,165
Texas	177	88	404	6,919	207	699	9,668	12,158
Mountain States	..	..	22	362	34	71	511	....
Total	269	198	774	12,725	434	1,380	18,478	*22,589

*Does not include Mountain States.

CALIFORNIA

HUNTINGTON BEACH—World Pet. Corp. 7, 10-6-11. Ben F. Munn, Munn 2, 10-6-11. J. A. Brower 1, 10-6-11. Warren & Macrate 2, 10-6-11; 3, 10-6-11.

INGLEWOOD — Standard, Baldwin-Cienega 54, 54, 17-2-14.

KERN FRONT—General Pet. Corp., Wetmore 13, 14-28-27. Wonder Co., Ltd., 12, 23-28-27.

RICHFIELD—Continental Oil Co., Pyne 6, 33-3-9.

SEAL BEACH—Associated Oil Co., Hellman 17A, 11-5-12.

SUNSET—Union Oil Co., Houchin 3, 10-11-23.

TEMBLOR—J. F. Harrison & Co. 2, 36-29-30.

VENTURA—Associated Oil Co., Lloyd 39, 27-3-23.

OKLAHOMA

CARTER COUNTY—Magnolia, Anderson 1, nw ne nw 33-1-3; Ratliff 2, se sw nw 29-1-3.

CREEK COUNTY—H. C. Wilson, Miles 1, ne c nw 10-5-8. Olean Pet. Co., Bigpond 3, sw ne ne 36-15-7. King et al, Eufaula 1A, c n l sw nw 5-18-11. Kennedy & Horner, Burnett 1, swc 24-18-11.

GARFIELD COUNTY — Chas. E. Knox, Crooks 7, swc ne 26-22-4.

HUGHES COUNTY — Ramsey Bros., A. Smith 1, nw ne se 8-5-8.

JEFFERSON COUNTY—Amerada & W. H. Grant, Ryan 1, ne se nw, 23-6-6.

KAY COUNTY—Harris & Hahn, Swinson 2A, sw se ne, 17-29-1. Empire G. & F. Co., Swenson 1, sw c se, 29-29-1. Larutan Fuel Co., Woods 2A, nw ne nw, 30-27-1. H. A. G. Oil Co., Vickory 2, nw c se se nw, 28-27-1.

MUSKOGEE COUNTY—Philip Boyle, Barnett 3, cel ne se, 8-15-15. W. A. Patterson, James 6, c se se, 18-14-17.

OKFUSKEE COUNTY—Minnehoma Oil Co., Holmes 2, cel ne nw, 30-11-11.

OKMULGEE COUNTY—F. D. Misener et al, B. Carter 3, cnl nw se, 10-15-14. Carr Peterson et al, E. Ware 3, c nw sw, 9-15-14. B. Martin, Caliway 2, cel se nw, 3-11-12. Moffett et al, Hawkins 7, csl sw se, 6-11-12.

OSAGE COUNTY—I. T. I. O., 379, nw c ne se, 17-27-11; 380, ne nw ne, 17-27-11; 376, nw c se ne, 21-27-11. Kewanee O. & G. Co. 3, sw se ne, 3-26-6; 4, se sw ne, 3-26-6. I. T. I. O. 34, nw c se ne se, 20-25-12. Sand Springs Home 108, sw c ne, 30-21-10.

PONTOTOC COUNTY—Homa Okla Oil Co., Milner 2, sw ne se, 17-5-8. American O. & R. Co., Wray 2, se nw nw, 34-5-6.

POTTAWATOMIE COUNTY — Pierce Oil Corp. et al, Davis 4, sw ne nw, 30-7-4. Gypsy, McGee 1, ne se ne, 23-7-4. Darby, Shaw 1, nw ne ne, 22-7-4. Magnolia, School Land 1, ne c sw, 36-7-3; School Land 1, nw c se, 36-7-3; School Land 1, se c nw, 36-7-3.

SEMINOLE COUNTY—I. T. I. O., Nitey 12, se nw ne, 2-7-6. Magnolia, Gosey 1, nw ne se, 1-7-6. Sinclair, Cumsey 3, nw sw ne, 10-8-6. Magnolia, Rhoades 1, se ne sw, 12-8-6; Rhoades 2, sw nw se, 12-8-6. Amerada, Roger 5, sw ne se, 3-9-5; Roger 4, ne se se, 3-9-5.

STEPHENS COUNTY — Brittain et al, Stephens 2, ne sw se, 12-1-4.

WAGONER COUNTY—H. W. Lampton, Rulison 1, nw c sw se, 9-15-16.

KANSAS

COWLEY COUNTY — Wakefield, et al, Winfield 1, lot 1, blk 41, City of Winfield, 22-32-4.

ELK COUNTY—Ohio Fuel Oil Co., Mullendore 1, c nw nw, 20-29-10. Hood et al, Eyman 1, c e l se se, 9-31-10.

GREENWOOD COUNTY—Roth & Faurot,

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TWO-PIECE CORE DRILL
Not now and then—not only under favorable conditions—but ALWAYS, in any formation and under all conditions of operation the Elliott-Alco Two-Piece Core Bit consistently recovers the most informative cores at the lowest recorded cost per foot of core recovered.
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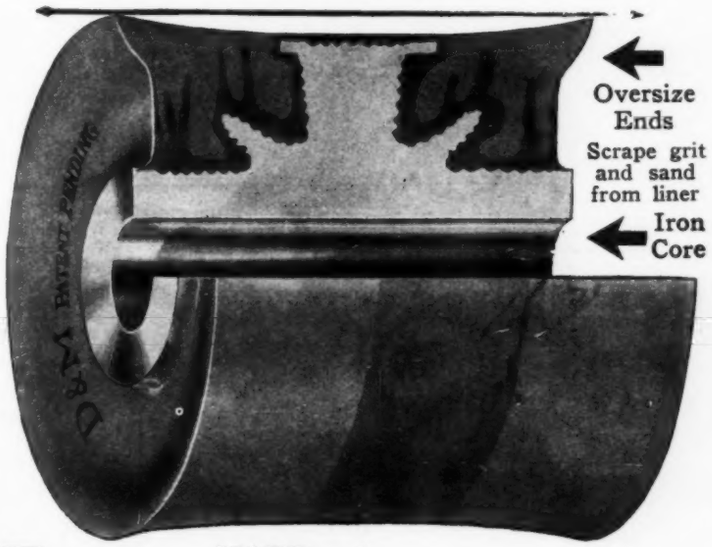

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What are they?

D & M Piston is a one piece rubber piston, bonded to a metal core, having a taper to fit any type of pump rod. Continuous concave tough rubber Pocket, expands to wipe liner when pressure is applied. Replaces the regular water end piston that ordinarily uses sand gathering rubber sleeves.

What will they do?

Unsolicited, a Major Company had published this report, under date March 25th, 1927.

A set of 6¾" D & M Pistons installed at Goose Creek, Texas, drilled 3583 ft. of hole, giving 31 days of continuous service without a shut down, except for coming out and going in the hole. During the operation of this set of pistons for 31 days, this company claims an actual equipment saving of $128.00, aside from saving of time in making changes in pump parts. At a depth of 5060 feet, they had stuck drill stem, however the D & M Pistons were still in use.

Why?????????

SAVES LINERS, PUMPS MORE PRESSURE AND VOLUME, PREVENTS PUMP SLIPPAGE— SAVES TIME

ASK YOUR SUPPLY STORE FOR THE D&M SERVICE MAN—AT SEMINOLE AT HOUSTON

Mid-Continent Distributor

TEXAS RUBBER SPECIALTY CO.

HOUSTON TEXAS

Manufactured by

D. & M. MACHINE WORKS

Lomita, California

Welch 3, ne c nw ne, 13-25-8. Lassen et al, Wilkerson 2, sw c ne nw, 7-25-9. McGinnis et al, Ferguson 2, nw c sw sw, 4-27-11.

LOGAN COUNTY—Coon et al, Andrews 1, nw c ne nw, 14-14-33.

SUMNER COUNTY—Roxana, Community 4, lot 9, blk 37, City of Oxford, 14-32-2; 5, lot 16, blk 52, City of Oxford, 14-32-2; 6, lot 4, blk 86, City of Oxford, 14-32-2.

TEXAS

ARCHER COUNTY — Robert Oil Corp., Breckenridge, Blewitt 1, B 2, J. Poitevent sur. Jno. O'Neil, Wichita aFlls, Wilson 2, W. Horritz sur, 250 ft from n and 150 ft from e line. Albert Crenshaw et al, Wichita Falls, Ayers 1, M. Fannin sur, 450 ft from w and 600 ft from s line. Jim Turner, Wichita Falls, Farmer 1, SP Ry. sur, 150 ft from s and e lines. Camp O. & G. Co., Wichita Falls, Griffin 1, PPCSL sur, 150 ft from s and e lines. Perkins & Cullum, Wichita Falls, Mankin 1, S 1, S. P. Ry. sur, 2130 ft from n and 2070 ft from e line. Maer & Staniforth, Wichita Falls, Wilson 16, DL&C Co. sur, 300 ft s of No. 15. Shappell Oil Co., Wichita Falls, Wilson B 14, S 9, T&P sur, 150 ft from e and 525 ft from s line. Staley, Wynne & Co., Wichita Falls, Edwards 1, Geo. Brunner sur, 150 ft from n and w lines.

AUSTIN COUNTY—Ross Oil Co., Houston, Pomycal 6, F. M. Williams sur, 400 ft w of No. 3. J. A. Conklin, Brenham, Pomical 4, S. M. Williams sur, 375 ft from e and 70 ft from n line. La Marque Oil Co., Brenham, Pomical 1, S. M. Williams sur, 70 ft from w and 30 ft from s line. M. Aronson, Brenham, Suudelhuse 1, S. M. Williams sur, 25 ft from n and 40 ft from w line; Suudelhuse 2, S. M. Williams sur, 125 ft s of No. 1. Joe Pomical, Brenham, Pomical 1, S. M. Williams sur, 55 ft form e and 60 ft from s line. C. A. DeWare, Brenham, Schurenberg 1, S. M. Williams sur, 40 ft from n and w lines; Schurenberg 2, S. M. Williams sur, 4 ft s of No. 1. J. A. Conkline, Brenham, Pomical 1, S. M. Williams sur, 50 ft from n and 55 ft from e line; 2, 50 ft from s and e lines; 3, 375 ft from e and 50 ft from s line.

BROWN COUNTY—M. E. Bishop, Brownwood, Bowsen 1, S 604, P. Mangle sub, 1260 ft from n and 150 ft from e line. Joyce Richardson, Brownwood, Meares 2, D. H. Meares sur, 1161 ft from sw and 1529 ft from nw line. Tower & McKanna, Inc., Wichita Falls, Edmondson 1, T. Townsend sur, 150 ft from n and w lines. H. W. Peck, Brownwood, Mills 1, J. W. Wheeler sur, 162 ft e of center of w line. McMurray, Gilman & Mendenhall, Cisco, Harris S 2, J. Sanders sur, 992 ft w of No. 148. D. B. Dozier, Brownwood, Hart 1, H&TC sur, 150 ft from s and e lines. E. N. Schaffner, Cross Plains, Guyer 2, Batton sur, 300 ft ne of No. 1. E. L. Smith Oil Co., Mexia, Smith 7, s l SA&MG sur, 300 ft n of No. 1. Selby O. & G. Co., Tulsa, Ellis 15, S 3, SA&MG sur, 1080 ft from e and 450 ft from n line; 16, 1360 ft from e and 450 ft from n line. Josey & Flinchbaugh, Fort Worth, Jones 1, J. Delgado sur, 3050 ft from e and 300 ft from s line. Faust Oil Cory., Fort Worth, Smith 7, sec 1, 265 ft ne of No. 6. Terrell, Morrissey Thompson & Gregg, Ranger, Rumph 2, T. J. Swindle sur, 150 ft from s and e lines.

BRAZORIA COUNTY—Gulf, Houston, Perry 3, S. F. Austin sur, 450 ft s of No. 1.

BEXAR COUNTY — Associated Pet. Co., Fort Worth, Koehler 1, No. 39, C. A. Yoakum sur, 245 ft from n and 350 ft from e line; Koehler 9, No. 265, J. Wilson sur, 250 ft from s and w lines.

CALLAHAN COUNTY—Jack E. Kelly, Abilene, Radford 1, S 79, Bayland Asy. sur, 150 ft from n and w lines. W. D. Kyndrd, Dallas, McDermott 1, B 46, CCSL sur, 1050 ft from e and 150 ft from s line. Gibson & Johnson, Abilene, Neuman 7N, S 5, D&D Asy sur, center. Shackelford Oil Co., Putnam, Thomson 3, 2296 TE&L sur, 1550 ft from n and 450 ft from w line. Kuhlemeier-Kleiner Oil Co., Putnum, Pruett 17, 2278 TE&L sur, 1110 ft from w and 150 ft from s line. Shaw & Rathke, Wichita Falls, Miller 12, B 98, CCSL sur, 150 ft from n and e lines; 11, 150 ft from n and 750 ft from w line; 9, 150 ft from n and 450 ft from w line; 8, 150 ft from n and w lines.

COLEMAN COUNTY — Amerada, Cisco, Harris S 2, J. Sanders sur, 992 ft w of No. 148. Magnolia, Dallas, Morris 19, D. Breeding sur, 4410 ft from w and 1510 ft from s line. Anchor Oil Corp., Coleman, Stevens 1, B 9, CCSL sur, 150 ft from n and w lines. National Ref. Co., Cleveland, Ohio, Crump 1, B 2, CCSL sur, center. Roth & Faurot, Independence, Kas., Smith 2, sec 19, 2310 ft from s and 330 ft from w line.

COTTLE COUNTY — Exploration Co. of Texas, San Angelo, Richards 1, S 4, D&SE sur, center.

CARSON COUNTY—Jno. T. Willis, Pampa, Burnett 1, S 111, B 5, I&GN sur, 330 ft from s and w lines.

CRANE COUNTY — Magnolia, Dallas, O'Keefe 12, S 38, B 30, Univ. Lands sur, 660 ft s of No. 8. Humble, Wichita Falls, University 12, S 38, B 30, Univ. Lands, 660 ft e of No. 1. Magnolia, Dallas, Hendricks 12, S 38, B 30, Univ. Lands sur, 660 ft n of No. 5. Landreth Prod. Corp., Breckenridge, Cowden 16, J. C. Blk 10, 660 ft e of No. 15.

COMANCHE COUNTY — Amerada, Cisco, Eanes 1, C. S. Corbett sur, 800 ft from e and 150 ft from s line; Morris 1, S 51, D&D sur, 150 ft from n and 1320 ft from w line; McRea 1, J. M. Barrow sur, 150 ft from n and w lines; Adams 3, J. M. Barrow sur, 1530 ft e of center of w line; Pruitt 1, J. M. Barrow sur, 150 ft from s and e lines.

CHAMBERS COUNTY—Mills Bennett & Moody Corp., Houston, Fee 9, Wm. Blodgood sur, ne of No. 8.

CALDWELL COUNTY—Humble, Houston, Clingsmith 1, S. Damon sur, 750 ft from se and 150 ft from sw line; Clingsmith 2, 450 ft from se and 150 ft from sw line. Kuhn & Armstrong, Lockhart, Thoms 1, J. Roberts sur, nw corner.

COOKE COUNTY—Claude Belle Oil Corp.,

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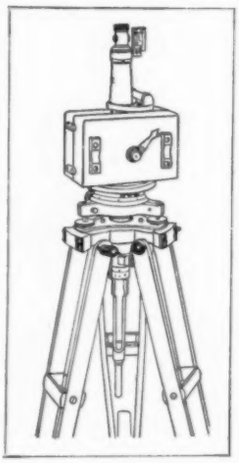

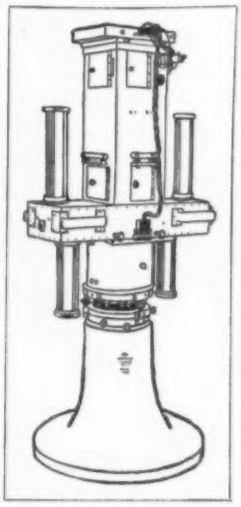

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Muenster, Lynch-Stahl 2, B 13, T. Scott sur, 30 ft nw of No. 1.

EASTLAND COUNTY—Moody Corp., Fort Worth, Grove 4, S 487, SP Ry. sur, 300 ft from n and 150 ft from w line. Chestnut & Smith et al, Breckenridge, Ward 1, S. J. Robinson sur, 660 ft frob n and w lines. Texas Co., Wichita Falls, Hightower 19, Wm. Van Norman sur, 2472 ft from w and 750 ft from s line; Hightower 20, 2769 ft from w and 708 ft from s line. Lowe, Delaney & Carter, De Leon, Barnett 2, S 15, B 4, H&TC sur, 300 ft from s and w lines. C. H. Hurdleston, Ranger, Fox 2, McL. C. S. L. sur, 300 ft w of No. 1. C. M. Root, Eastland, Ray 3, S 38, B. 4, H&TC sur, 2000 ft from e and 600 ft from s line. Prairie O. & G. Co., Ranger, McFall 1, S 34, B 3, H&TC sur, 330 ft from s and e lines.

ECTOR COUNTY—U. S. Bureau of Mines, Carlsbad, N. M., Connell 4, B B16.

FLOYD COUNTY—Exploration Co. of Texas, San Angelo, Matador 1, 1 S1 blk 0, D&SE sur (Hale County); Matador 1, S 119, B D3, D&P Ry sur, 200 ft from n and 1320 ft from w line; Boon 1, C. H. Johnson sur, center.

HARRIS COUNTY — Gulf, Houston, Perry burgh, Penna., Coats 1, W. Berryman sur, 150 1, J. A. Williams sur, 350 ft from e and 48 ft from s line. Moody Corp., Houston, Hume 2, J. Hamilton sur, 1045 ft from n and 20 ft from w line. Rio Bravo, Houston, Settegast B 45, B 6, J. Kopman sur, 300 ft s of No. B2.

HALE COUNTY—Exploration Co. of Texas, San Angelo, Goodman 1, S 1, Blk 0, D&SE sur, center.

HOWARD COUNTY—Magnolia, Houston, Chalk 8, S 124, B 29, W&NW sur, 660 ft from n and w lines; Chalk 8, S 124, B 29, w&nw.

HARDIN COUNTY—East Batson Oil Co., Batson, Batson 5, F. H. Green sur, 50 ft from n and 200 ft from w line.

HARRISON COUNTY — J. R. Bahan, Shreveport, La., Hickman 3, E. Pollock sur, 1250 ft from w and 2090 ft from s line. M. L. Friend, Shreveport, Furrh 3, J. Short sur, 5332 ft from n and 1520 ft from e line.

JIM HOGG COUNTY—Alworth, Stevens, Hild & Co., Laredo, Garza 17, S 39, 600 ft se of No. 13.

JACK COUNTY—Craig & Lowrie, Pittsburgh, Penna., Coats 1, W. Berryman sur, 150 ft from s and w lines. Tedford Bros., Wichita Falls, Richards 1, BBB&C sur, 900 from n and 200 ft from w line. Madden & Hunt, Olney. Sloan 1, J. W. Williams sur, 150 ft from n and w lines. W. H. Champion, Wichita Falls, Hodge 1, M. Pictman sur, 1670 ft from n and 150 ft from e line. R. B. Irvin et al, Brownwood, Ball 1, BBB&C sur, 150 ft from e and 750 ft from s line. Shaw & Rathke, Wichita Falls, Cullers 2, No. 4 SP Ry sur, 250 ft from e and 175 ft from s line.

JEFFERSON COUNTY — Gulf, Houston, Bordages 4, M. Bowes sur, 200 ft s of No. 2. Yount-Lee Oil Co., Beaumont, McFaddin 43, B 1, P. Humphreys sur, 1183 ft from e and 856 ft from n line.

KENT COUNTY—Douglas Oil Co., Tulsa, Okla., Beggs 1, S 57, B 7, H&GN sur, center of nw ¼.

LIVE OAK COUNTY—Simmons Oil Co., Three Rivers, Texas, McGriff 1, 200 ft from n and 1080 ft from e line; P. Reagan 1, 150 ft from n and 2400 ft from e line; P. Reagan 2, 1320 ft e of No. 1.

LIMESTONE COUNTY — Reiter-Lewis & Moutray Oil Co., Abilene, Ward 2, P. Varela sur, 150 ft from nw and 162 ft from sw line; Dugger 1, P. Varela sur, 150 ft from n and w lines. Rycade, Houston, Ward 1, P. Varela sur, 150 ft from n and w lines. Transcontinental Oil Co., Mexia, Dugger 2, P. Varela sur, 150 ft from s and w lines. Noah Pierce O. & G. C., Waxahachie, Garrett 1, I. Koons sur. C. F. Lytle, Mexia, Evans 2, P. Varela sur, east of No. 1.

MONTAGUE COUNTY — Continental Oil Co., Wichita Falls, Loy A. A1, W. Donoho sur, 195 ft from e and 1122 ft from s line. Birdwell Heydrick & Continental Oil Co., Wichita Falls, McGauhey 3, G. Nichols sur, 310 ft ne of No. 1.

MILAM COUNTY—J. W. Kemp, Corsicana, Core 1, ne central part of lease.

MOTLEY COUNTY—Reeves & McRobre, Fort Worth, Echols 1, S 64, Arnold-Barrett sur, 1200 ft from w and 560 ft from s line. Exploration Co. of Texas, San Angelo, Matador 1, S 37, J. Gibson sur, center.

MEDINA COUNTY—Witherspoon Oil Co., San Antonio, Faseler 1, L. G. Harrison sur, 1350 ft from n and 550 ft from e line; Nixon 4, No. 119 I&GN sur, 2100 ft s of No. 1.

McCULLOUGH COUNTY—M. E. Wakefield et al, Cross Plains, Dutton 1, No. 588, A. Froelich sur, 450 ft from n and w lines.

NUECES COUNTY—W. L. Pearson, Corpus Christi, Meaney 2, 730 ft from e and 218 ft from s line.

NAVARRO COUNTY—G. C. Kent, Corsicana, Hardy 19, S. F. McCandless sur, 300 ft nw of No. 15.

PALO PINTO COUNTY — Mountain Oil Corp., Dallas, Costello 1, J. Smith sur, 200 ft from w and 180 ft from s line.

POTTER COUNTY—Paramount Oil Corp., Amarillo, Sanford 3, S 82, B 46, H&TC sur, 330 ft from w and 225 ft from s line.

PECOS COUNTY — Mid-Kansas O. & G. Co., Tulsa, Okla., Smith-Taylor 3, S 33, I. G. Yates sur, ne corner. Roxana, Houston, Smith 1, S 27, B 194, GC&SF sur, 2071 ft from w and 330 ft from s line. McMan O. & G. Co., Tulsa, Okla., Yates 6, S 34½, B 194, GC&SF sur, 75 ft n of center of s line.

PANOLA COUNTY—Cranfill & Reynolds, Cisco, Mays 1, J. Thorp sur, 1333 ft from e and 407 ft from s line. Magnolia Pet. Co., Dallas, Steele 11, B. C. oJrdan sur, 400 ft from w and 1400 ft form s line; Steele 12, 600 ft from n and e lines.

REAGAN COUNTY—Henshaw Oil Corp., San Angelo, University 1, S 14, B 48, Univ. Lands sur, center.

REFUGIO COUNTY — Houston Gulf Gas Co., Houston, Heard 1, Refugio sur, 2200 ft from n and 150 ft from w line; Heard 2, 1000 ft from w and 1200 ft from s line; Heard 3, 150 ft from w and 1840 ft from s line; Heard 4, 1100 ft from w and 1600 ft from s line. G. M. Ball, San Antonio, Terrel 1, Martin Power sur, east central.

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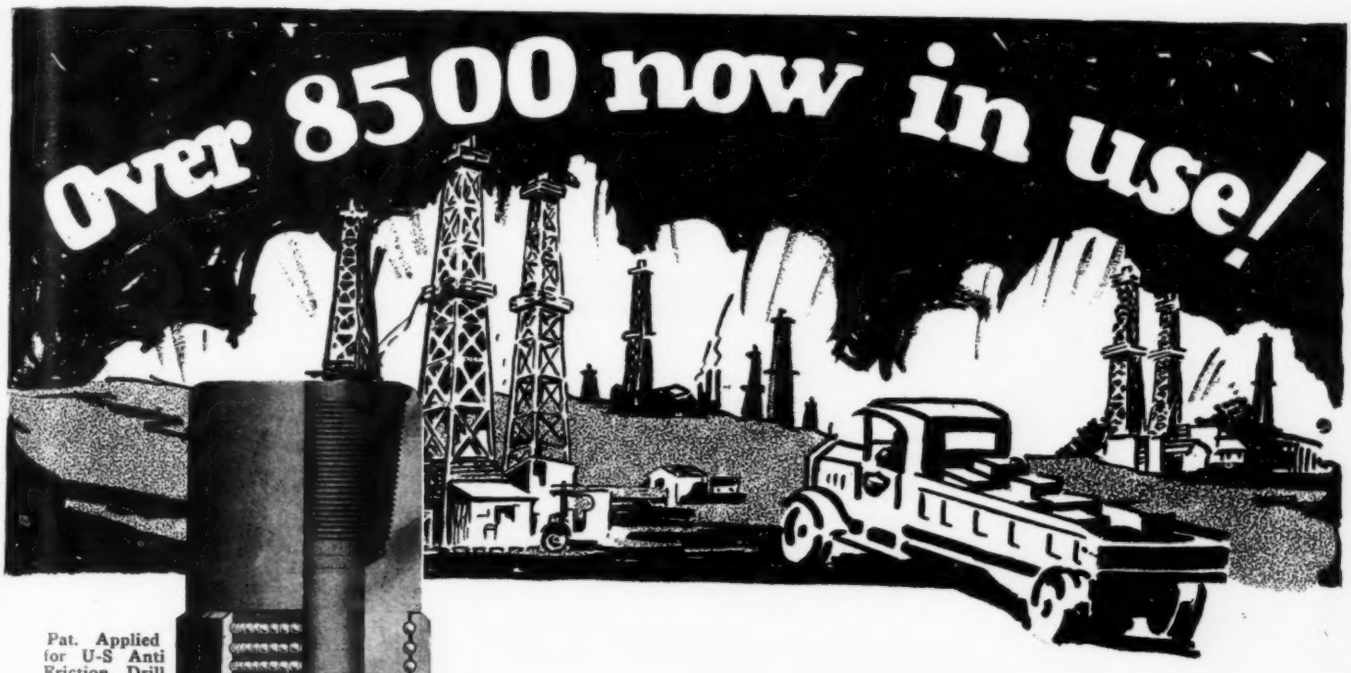

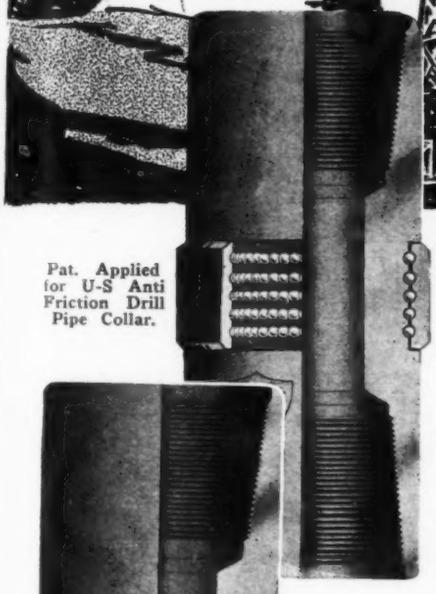

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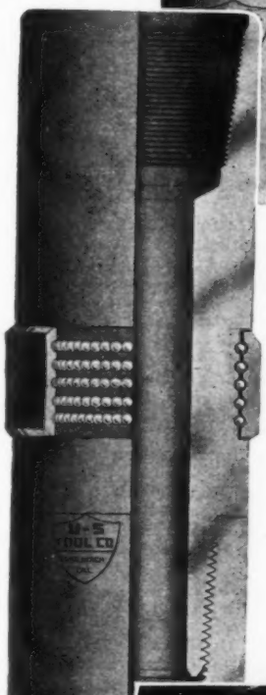

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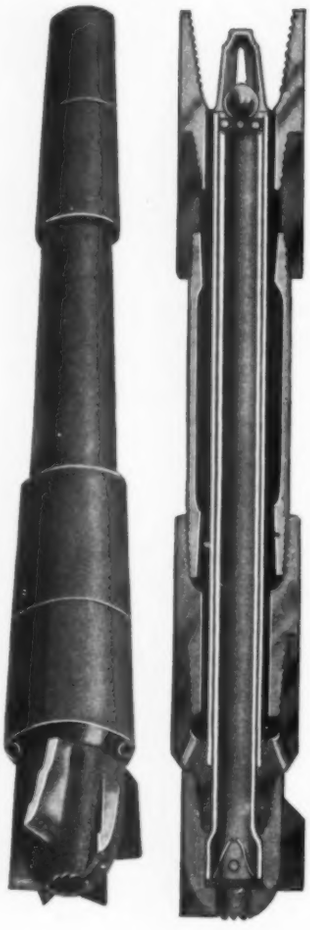

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SHACKELFORD COUNTY—G. G. Pass, Albany, Broyles 4, S 14, LAL sur, 500 ft from e and 450 ft from s line. W. H. Reynolds, Albany, Webb 1, S 19, B 11, T&P sur. C. H. Helf, Albany, Ezzell 2, S 3, LAL sur, 300 ft n of No. 1. P. S. Kendrick, Albany, Texas, Stephens 1, S 6, Blind Asy. sur, 435 ft from n and 1150 ft from w line. J. P. Harris, Mineral Wells, McLemore 1, B 144, TE&L sur, 300 ft from n and 150 ft from w line. Forsythe & Choate, Fort Worth, Sidebutton 1, 619 TE&L sur, 150 from n and w lines. Roy T. Hoff, Moran, Snyder 2, S 39 LAL sur, 400 ft from n and 570 ft from e line. Hutton Oil Corp., Cisco, Littlefield 1, S 7, LAL sur, 450 ft from n and w lines.

STEPHENS COUNTY — Hanlon Gas Co., Breckenridge, Todd 1, S 12, B 6, T&P sur, 600 ft from n and 1065 ft from w line. Gardner Bros. & Collins, Wichita Falls, CVunningham 3, S 1210, TE&L sur, 275 ft from s and w lines. J. H. Holdeman, Fort Worth, Grudgington 1, No. 1268 TE&L sur, 150 ft from n and w lines. Gardner Bros. & Collins, Wichita Falls, Cunningham 1, 1210 TE&L sur, nw corner.

SAN PATRICIO COUNTY—W. L. Pearon, Corpus Christi, Cage 1, C. P. Rachal sur, se corner; Rachal 12, 1322 rt from n and 150 ft from w line; Dunn 7, 150 ft from n and 811 ft from e line. Houton Oil Co., Houston, Humble 3, B 7, Roos sur, 200 ft from n and 250 ft from e line; Humble 2, 167 ft from s and e lines; Baldwin 1, B 5, Roos sur, 250 ft from w and 200 ft from s line.

TAYLOR COUNTY—W. E. Halbert et al, Fort Worth, Hunt 1, S 124, H&TC sur, center.

THROCKMORTON COUNTY—Lewis Gas Prod. Co., Pittsburgh, Penna., Mathews 3, S 232, E. T. Ry. sur, 500 ft from n and 300 ft from w line.

WICHITA COUNTY—Texas Co., Wichita Falls, Honaker 66, DI&C sur, 5725 ft from n and 200 ft from w line. A. T. Wolfe & Sons, Wichita Falls, Daume 6, No. 1 S. P. Ry. sur, 300 ft n of No. 1. Hammon & Garrett, Wichita Falls, Kemp & Kell 2, S. P. Ry. ur, 150 ft from e and 1395 ft from line.

WINKLER COUNTY—Murchison Oil Co., Wichita Falls, Hendricks 3, S 35, B 35, School sur, 330 ft from s and w lines; Hendricks 2, 330 ft from n and e lines. Amerada, Cisco, Walton 1, S 48, B 26, School sur, 330 ft from s and w lines. Marland, Fort Worth, Hendricks 1, S 35, B B5 School sur, 330 ft from n and w lines; Hendricks 2, 330 ft from s and w lines. Southern Crude Oil Purchasing Co., Shreveport, La., Hendricks 2, S 4, B B12, School sur, 330 ft from n and w lines. Pure Oil Co., Houston, Hendricks 2, S 34, B B5, School sur, 330 ft from s and e lines.

WEBB COUNTY—Magnolia, Dallas, Garza 9, S 58, J. W. Littig sur, 300 ft e of No. 8. Houston Oil Co., Houston, Benavides F1, M. Arispe sur, 1328 ft from e and 769 ft from s line; Benavides C1, M. Arispe sur, 627 ft from e and 694 ft from s line.

WHEELER COUNTY—Hatcher & Hudbank, Shamrock, Hatcher 1, S 80, blk 23, H&GN sur, center.

WASHINGTON COUNTY — Pratt-Hewitt Oil Corp., Houston, Brinkmeyer 1, S. M. Williams sur, 40 ft from s and w lines.

WHARTON COUNTY — Weed-Gayle Oil Co., Beaumont, Bay 13, S. F. Austin sur, 730 ft from ne and 610 ft from nw line; Feltz 14, S. F. Austin sur, 200 ft from ne and 120 ft from se line.

WALLER COUNTY—J. R. Garrett, Brookshire, Fee 1, Sam Williams sur, 300 ft e of center of w line.

YOUNG COUNTY—Tarkenton & Schofield, Wichita Falls, Prideaux 1, Wm. Stoneham sur, 150 ft from s and e lines. Hynes & Hynds, et al, Cheyenne, Wyo. Criswell 1, T. P. Reeder sur, 700 ft from s and e lines. G. A. Gifford, Abilene, Rutherfood 1, 644, TE&L sur, 465 ft from w and 150 ft from s line. J. W. Collier, Markley, Fee 6-7, No. 21 sur. Camp O. & G. Co., Wichita Falls, Peters 1, No. 1, I&GN sur, 150 ft from n and e lines.

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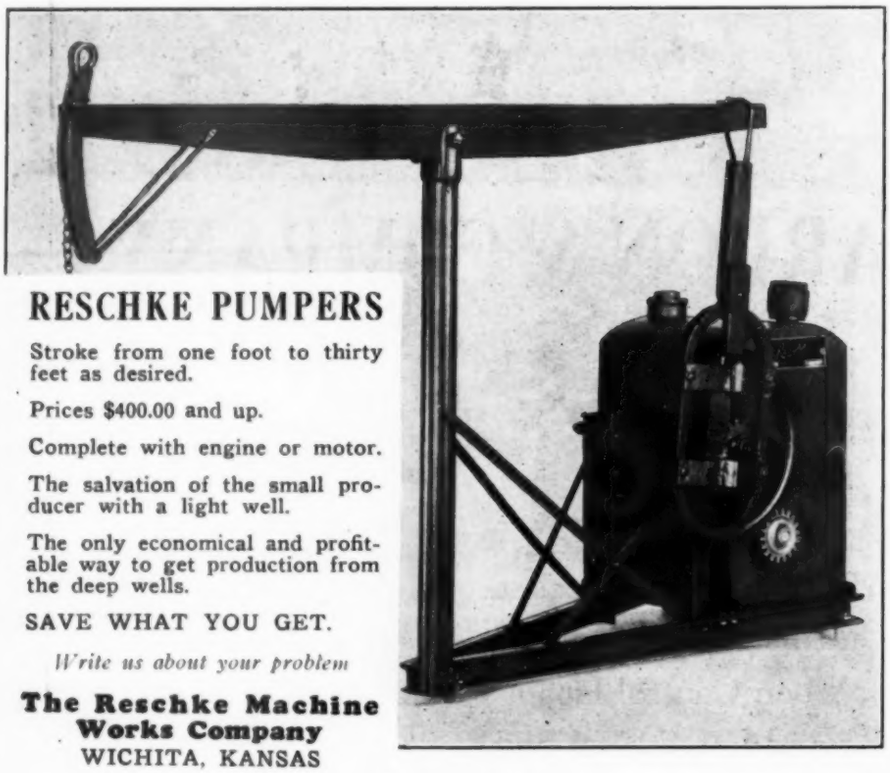

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New ownership maps of Cooke, Montague, Brown and Coleman counties, Texas, now ready. Showing: land and lease owners, oil development, towns, railroads, highways and streams. Scale, 4,000 feet 1 inch.

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WICHITA FALLS, TEXAS

port, P. A. Sharp 2, 10-18n-16w, 1980 ft w and 3300 ft n of sec. Haynes Bros. & Bussa, Shreveport, Spell 2, 15-21n-15w, 200 ft n and 856 ft w of sec se ne. Magnolia, Shreveport, W. M. Bell 2, 6-17n-16w, 220 ft n and 200 ft e of swc; Hampton A-8, 15-21n-15w, 200 ft n and 1070 ft e of center.

CALCASIEU PARISH—Gulf, Houston, Tex., Huggins B-10, 28 9s-11w, 200 ft e and 50 ft s of nwc sw nw; Industrial Lbr. Co. 8, 30-9s-12w, 900 ft s and 100 ft e nwc se nw; Lutcher & Moore 7, 19-9s-12w, 1705 ft w and 1312 ft s nec. Vacuum, Houston, Texas, Farquhar A-3, 9-10s-9w, 175 ft s and 250 ft e of nwc sw; State (Bayou D'Inde) 4, 9-10s-9w, 250 ft e and 510 ft n swc nw. (Corrected Lcn.) The Wilson-Broach Co., Beaumont, Texas, Kountze 1, 28-9s-11w, 1105 ft w and 250 ft s nec; Kountze 2, 28-9s-11w, 1105 ft w and 50 ft s nec.

CAMERON PARISH—Yount-Lee, Beaumont, Texas, State Land 5, 20-12s-10w, 378 ft e and 1230 ft n of swc nw nw.

CATAHOULA PARISH—Lochnager O. & G. Co., Pittsburgh, Pa., Beasley 2, 26-9n-6e, 384 ft s and 516 ft e of nwc sw se.

LA SALLE PARISH—Bruce Hunt, Urania, Urania Lbr. Co. 5, 7-10n-2e, 660 ft s and 150 ft e of center of sec.

NATCHITOCHES PARISH—Lawson & Pharis, Shreveport, W. C. Wise 1, 28-5n-6w, 450 ft w and 280 ft n of sec se sw.

OUACHITA PARISH—Hatcher & Evans, Monroe, Hatcher & Evans 6, 16-19n-4e, 1007 ft n and 3575 ft e of N¼ c sec 20 in sec 16. Industrial Gas & Dev. Co., Monroe, J. D. McGee 1, 3-18n-4e, 3353 ft e and 600 ft n sw c.

SABINE PARISH—Arkansas Fuel Oil Co., Shreveport, O. F. Moore 2, 32-10n-12w, 316 ft n and 323 ft e of sw c se of sw. Magnolia, Shreveport, F. C. Rembert 2, 32-10n-12w, 330 ft s and 330 ft e of nw c sw se.

WEBSTER PARISH—Magnolia, Shreveport, J. T. Marshall 5, 21-21n-10w, 330 ft s and 330 ft w of ne c nw se.

ARKANSAS

COLUMBIA COUNTY — Big Creek Oil Co., Runyon A-1, 3-16-21, 660 ft n and 360 ft w of se c.

NEVADA COUNTY—J. J. O'Brien, Haynie B-3, 1-14-21, 350 ft s and 662 ft w of ne c nw se. J. J. O'Brien Moss B-5, 1-14-21, 150 ft n and 660 ft w se c nw se.

OUACHITA COUNTY—H. M. Harrell Tr.'s Camden C. & C. Co. 1, (owd), 12-12-18, 330 ft n and 850 ft w of se c.

Pearson Switch Producer

Tulsa.—Continental Oil Company's Doyle 2, southwest of the northwest of the southwest of 19-7-4, Pearson Switch pool, Pottawatomie County, topped the Hunton lime at 3746 feet September 10 and made 40 barrels an hour initial to increase to 80 barrels an hour after deepening to 3810 feet.

A. W. Duston has resigned as chief geologist and head of the land department of the Independent Oil & Gas Company, Tulsa, to go into consulting work. He will remain a member of the Independent's board of directors, having been named a member of the board shortly after the company headquarters were removed to Tulsa from Okmulgee. He has been with the company as chief geologist since 1925. Duston plans to take a vacation before opening offices as a consultant.

Donald H. McIvor, oil editor of the Wichita, Kansas, Beacon, for the past three years, resigned September 15 to join T. C. Johnson, independent operator in Kansas, as a lease buyer.

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Will Cost You Many Times the Price of

The

C.I.W.

BLOWOUT PREVENTER

Drill Through It—

—and when high-pressure gas pockets are struck, quickly clamp the rams around the drill stem from outside the derrick floor, and save thousands of dollars worth of drilling equipment. Higher pressures only cause the lip on our patented packing to grip tighter and tighter—tested and guaranteed to hold 2000 pounds hydrostatic pressure.

Use It in Well Manifold—

—by substituting our Preventer for the cross in your well manifold. This permits your drill stem (with which liner has been set) to remain in the hole suspended on preventer rams and eliminates the dangerous operation of removing it UNDER PRESSURE.

Let us tell you about one operator who suspended 72,000 pounds of 3-in. drill pipe on our preventer rams, and at the same time held a gauged well pressure of 1680 pounds WITHOUT A LEAK. That is what we mean by "COMPLETE CONTROL" of high pressure wells.

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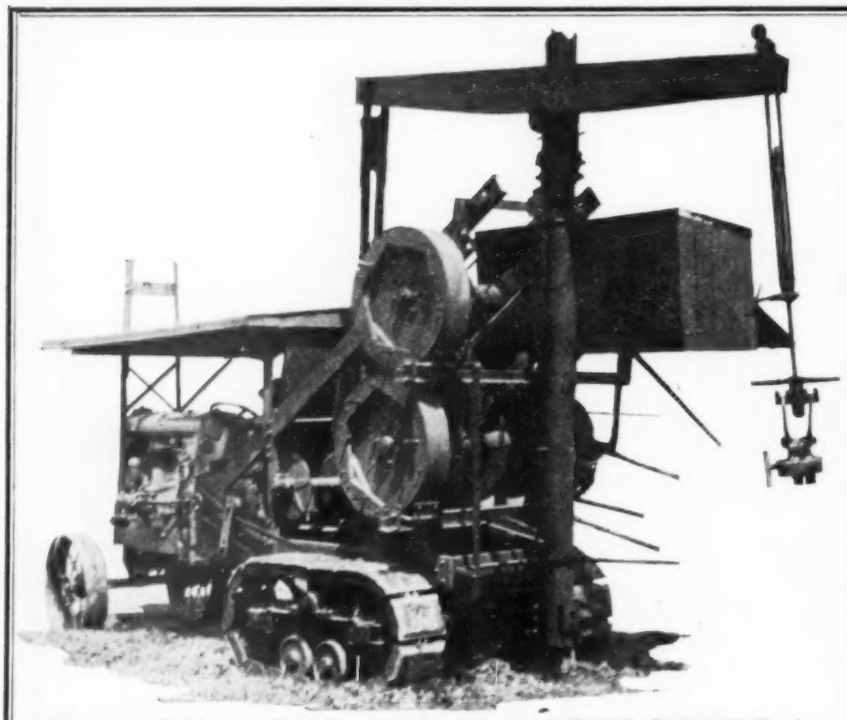
Cameron Iron Works

Houston, Texas.



Visit our display on Lot B. See the improved OHIO CLEANER, the pioneer light cleaning and drilling machine, equipped with Calf Reel, Spudder, Water Pump, Electric Lights and Electric Driven Blower. Many other improvements and refinements.

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North Baltimore, Ohio.

Mid-Continent Representative: Marion Machine, Foundry & Supply Co.

Eastern & Export Office: 90 West Street, New York City.

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ALL St. Louis— is NEAR

THE CORONADO HOTEL

THIS Great Hotel stands *geographically* and *socially* in the heart of the city - - - - and on its highest point. Smartly furnished Guest-Rooms, single or *ensuite* - - 5 dining rooms, dancing nightly . . . . *the Coronado has taken a place among the noted Hotels of the WORLD!*

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Oil and Gas and Land Practice

Winkler Field, Pyote, Texas

Tulsa Exposition Will Be Big Educational Event

(Continued from paeg 60)

Dodge. The plane will be piloted by Frank Hawkes.

Deane Gill, land man for the Manhattan Oil Company, will fly up from Fort Worth with two friends as passengers in a Travelair Whirlwind. Robert F. Garland, independent oil producer of Tulsa, will fly the longest distance, coming from San Diego in a Ryan monoplane, a machine he will take the agency for in Oklahoma.

Another Ryan will bring a number of the sales force of Maxwell House Coffee Company of Memphis, and a giant Fokker tri-motored plane of the Royal Typewriter Company is coming to the exposition also as a sales idea.

The Eagle-Picher Lead Company of Joplin is sending T. C. Carter, manager of the metals department, with J. V. C. Gregory, chief pilot, in a Swallow. Gregory will put on a special serial fireworks display Tuesday night, September 27.

Two Phillips Petroleum Company officials will come down from Bartlesville, Okla., with Pilot Billy Parker in the company's Travelair. A. E. Merriam of Wichita and E. G. Johnson of Ardmore, each of whom own Swallows, will fly to the exposition. The Scientific Research Company of Tulsa will have a folding wing plane on display.

Other men who have sent word that they will fly to the exposition are Parker Kramer, inspector of the department of commerce, with a Stinson-Detroit; Virgil Halliburton, of the producing department of the Mid-Continent Petroleum Corporation, with a Waco 10; Eddie Spencer, of Seminole, with an Eaglerock; Glenn Hurrune, of the Sinclair Oil Company at Covington, Okla., with a Waco 10; Joe Wolf, a drilling contractor of Seminole, with a Waco 10; Hugh West, a drilling contractor of Seminole, with a Whirlwind Waco; A. M. Sloan, of Colorado, Texas, a Waco 10; Lieut. Aubrey Strickland, of Muskogee, with a G. H. Plane; and the Skelly Oil Company of Tulsa, with a Mid-Continent Spartan.

Contests and Sports

Contests pertinent to the oil business are to take an important place in the exposition program, and will be confined to the practical phases of the industry. They will include safety drills of the safety division of the Mid-Continent Oil & Gas Association, veterans of the oil business, and the women of the oil company offices.

The queen of oildom is going to be the best manipulator of a machine—typewriter or calculator. There is to be a contest open to all women employes of oil companies. The awards will on the basis of speed, accuracy and general intelligence.

The he-man portion of the contest program will be in safety drills and a tug of war. The safety teams will represent oil companies and will show how lives and property are saved. The old-time tug of war, with teams representing various

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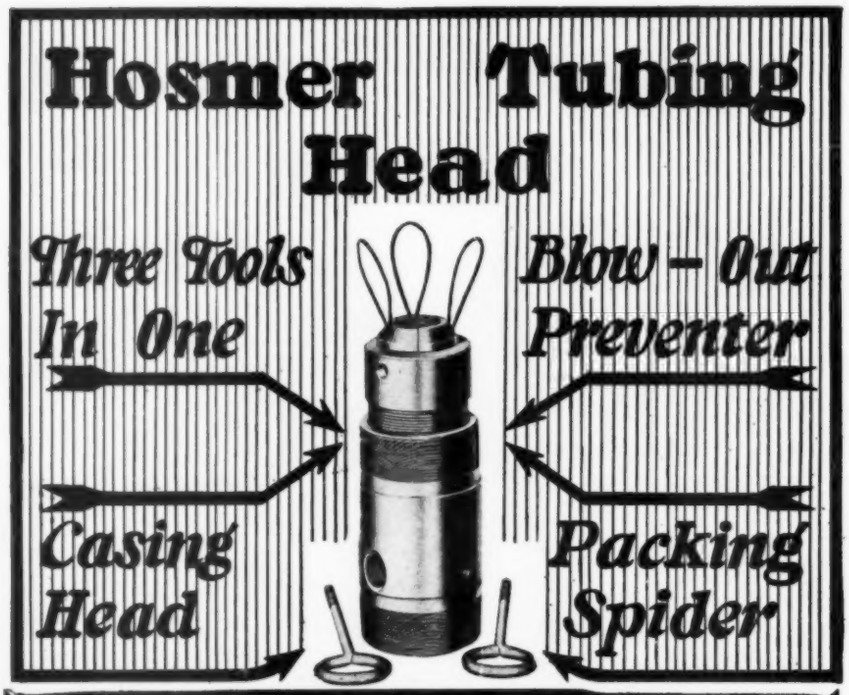
Hosmer Tubing Head



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The simplicity of design, strong construction and quick acting features of the Hosmer Quick Acting Tubing Head place it in a class by itself. The Packing assembly is simple and effective, with the rubber cut through on one side which permits the assembly to open with a hinge motion.

Furnished with discharge outlets—combination male and female threads—full opening through the body to correspond with the casing size. This will allow the use of a bailer or cleaning out tools of the same size as the casing on which the tubing head is used.

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"ELBOF"

The electric geophysical method of subsoil surveying.

Locating, defining the areas and determining the depth of petroleum deposits.

ANDREWS & BORSUM

Esperson Building Houston, Texas

oil companies, is expected to be one of the most interesting events of the entire exposition.

A golf tournament for exposition visitors will start September 26 and will continue for three days. Prizes will be awarded to winner and runner-up in each flight of 16 players. For those who do not play golf, a horseshoe pitching tournament will be held on the exposition grounds on Tuesday morning and afternoon, September 27.

There are many entries in the old-timers' department. The object is to bring out for recognition the oldest survivors. The exposition office has numerous letters and statements showing service in the oil fields for over 60 years. The record veterans will be given a suitable recognition and each oil company, state, section or city is to put forward its favorite old-timers.

The program of contests is:

Sept. 24—First Aid and General Safety.

Sept. 26—Qualifying round of golf tournament, match play following three days.

Sept. 26—Old Timers of the oil industry.

Sept. 27—Women's contest, open to employes of 30 days standing, typewriting and counting machines.

Sept. 27—Horseshoe pitching tournament.

Sept. 28—Tug of war—open to employes of oil companies.

Entertainment

Entertainment, aside from the contests will be divided between golf, football, the boys' band from Hominy, Okla., high school, and an aerial fireworks display to be held Tuesday night, September 27.

All amateurs engaged in any branch of the oil industry are eligible for the exposition tournament, which begins September 26 on the links of the Tulsa Country Club. After 18-hole qualifying rounds, all entrants will be divided into flights of 16 each, for match play. Prizes will be awarded winner and runner-up in each flight, to the qualifying medalist, and to the state whose two leading players have the lowest total qualifying score will be awarded the J. Edgar Pew trophy.

Johnnie Jones, 8-year-old trap drummer and leader of the Hominy high school boys' band, will be featured throughout the musical program at the exposition.

The University of Tulsa will open its football season for the benefit of gridiron followers among the visitors to the exposition, playing Parsons College of Fairfield, Iowa, Saturday, October 1, the final day of the exposition.

J. V. Gregory, chief pilot of the Eagle-Picher Lead Company of Joplin, Mo., will put on the aerial fireworks display in his Swallow biplane to the south of the exposition grounds, September 27. This display is slated to begin at 9:30 p. m., immediately following the fireworks display in front of the grandstand near the exposition grounds.

More Books on

PETROLEUM

DURING the past few years a large percentage of the best selling books on the various phases of petroleum have been books published by, and sold through the Gulf Publishing Company of Houston, Texas.

Exceptional facilities for the printing of petroleum books, close acquaintance with the oil industry, mailing lists of nearly 100,000 names in the oil industry and unexcelled mailing equipment have loaned themselves to excellent sale of good oil books by this company.

There is an ever increasing interest on the part of the executives and field men of producing oil companies in more "knowledge through books."

This company will be interested in receiving manuscripts of prospective books written for oil producers by authorities who are competent to handle the subjects undertaken.

We have two bases of procedure in the publication of technical books—the royalty basis or the "outright contract work" basis.

It is preferable to precede the manuscript with a letter outlining the purpose of the book, its contents, and a statement of the author's idea as to why it will sell, etc.

We do not wish to convey the idea that we are in the market for any type of book manuscript, but we shall be very glad to receive manuscripts on subjects that our experience leads us to feel have a real market.

Communications and manuscripts should be addressed to

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Reputation, like character, built—not conferred. The reputation of Ratigan equipment—A reputation for honorable construction and trustworthy performance has been built upon many years of actual service—a service that has been distinguished for uniformity and consistency under trying and difficult conditions.

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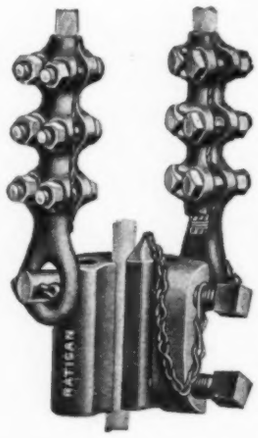
Engineering skill, mechanical ability and a practical knowledge of oilfield requirements coordinate in the establishment of Ratigan quality, Ratigan performance and Ratigan reputation.



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APPRAISALS
REPORTS, COMMERCIAL AND TAX

SURVEYS
ESTIMATES OF OIL RESERVES

Accident Prevention Saves Lives and Profits.

(Continued from page 148)

the injured employee with a new man, clerical work incident to the accident and other causes which we cannot dispute as being influential in running up production costs. Our conclusion, after reading Mr. Heinrich's article, "The Industrial Cost of Accidents," which covers his study, is that Mr. Heinrich has been very conservative in his conclusion.

Profits

The accident prevention thought has resulted in the development of many efficient methods and tools in the petroleum industry. It was told to me in a small refinery in the Mid-Continent area that a year ago the refinery was losing money. A new superintendent took charge of the refinery. He cleaned the property up, eliminated leaks and practices which were creating hazards, organized his force for fire and accident prevention work, and the refinery is now making money even under the present adverse market condition. Incidentally the refinery is operating with a smaller working force than it had before. Invariably, high accident costs accompany high production costs.

In the oil fields the desire to protect workmen has brought about such new devices as safety elevators, safety rod wrenches, and the clutch or automatic cathead. These all help to speed up the work. The clutch or automatic cathead removes the workman entirely from the dangerous position on the cat line when breaking the drill pipe and leaves him free to assist the rest of the crew around the rotary table on the slips and the tongs. A contractor has said that this new cathead has speeded up operation at least 25 per cent and will pay for itself in drilling one well. Workmen who are working with the accident prevention thought are better producers, are happier on the job and are more permanent employees.

The petroleum industry as one of our national leaders must build up the reputation of being a safe industry, so that the more progressive youth of the country will turn to it for livelihood and a future, rather than shunning it on account of its dangers.

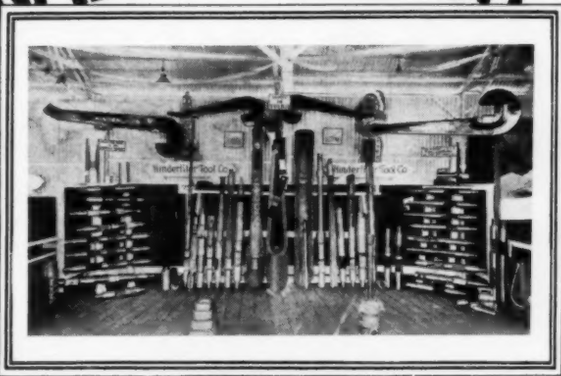
All oil operators should give special attention to accident prevention, for they are obligated to protect the workmen, to reduce human suffering, to reduce claims costs, and last of all, but not least, to reduce production costs.

Good Management

Accident prevention is a part of and can be accomplished through good management. Management must establish safe working conditions and then develop safe workmen. There is a refinery in Western Pennsylvania where it is practically impossible to look around without seeing one or more No Smoking signs. The superintendent of this plant says that these signs don't mean **maybe.** He himself quit smoking

Plan to Come

BOOTHS 22-23-24
TEXAS BUILDING
INTERNATIONAL PETROLEUM EXPOSITION



Tools that drilled an oil well in West Virginia in 1859 will be shown in our booth.

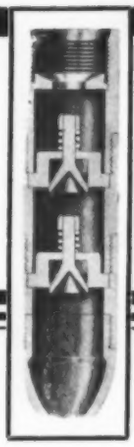
Visitors are also welcome at our plant. We want you to see for yourself our precision methods.

HINDERLITER TOOL CO.

TULSA — OKLAHOMA

Say you saw it in The OIL WEEKLY

Left Hand Threading allows cast-iron guide-plug to unscrew for deeper drilling.



2 Back-Pressure Valves

—insure utmost protection against high gas pressure troubles—and maximum clearance permits easy oil flow in our—

Improved Set Shoes

Write for Information and Prices.

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806 Walnut St. Houston, Texas

Reaming **643** *feet in*

16 *hours*

10⅝-in. size to run in 11-in. casing. Cuts 1¾-in. larger (11⅞-in.) hole.

on the Elbe Oil Co. well at Round Mountain with the

MacCLATCHIE Rotary Under-Reamer

using only ONE set of cutters

This is a positive expansion Under-Reamer. It reams from ¾" to 1½" larger hole, according to size.

It is POSITIVE because it must open and open to no less than FULL GAUGE.

It is the LAST WORD in SIMPLICITY.

The MacClatchie Under-reamer is as easy to run in and out of the hole as a roller bit. It operates on the principle of a governor, automatically expanding when rotated to the right, and automatically closing with a quarter turn to the left. Materials used in its construction are the best obtainable throughout.

If you want faster reaming jobs and better hole at less expense, try the MacClatchie Rotary Under-reamer. We will gladly supply records of actual field runs and names of many satisfied users.

Look it over at Booth 108, Oklahoma Bldg., International Petroleum Exposition

MacClathie Mfg Co.,
Compton, California.

Gentlemen:

I desire further information concerning the MacClatchie Rotary Underreamer.

Name .....

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.....

in order that he might be able to set a good example for the workmen about the refinery. During the earlier part of 1927 this refinery experienced nine accidents over a period of five weeks. The superintendent analyzed these accidents with the conclusion that eight were caused by acts of workmen. This plant has been provided with reasonably safe working conditions and the superintendent is in a position to demand of the employees that they work more safely. The superintendent called this situation to the attention of the workmen of the refinery and explained to them that men who could not work safely under safe conditions were not desired in that plant. As a result, the refinery has gone some months without a single accident. Accidents do not happen to safe workmen under safe working conditions.

It is regrettable that all plant managements have not provided these safe working conditions so that their superintendents can demand that men work safely. A superintendent who will quit smoking so as to set a good example for his men and provide safe working conditions and who takes a specific interest in the cause of accidents, shows without a doubt that he has the best interest of his company and the workmen at heart.

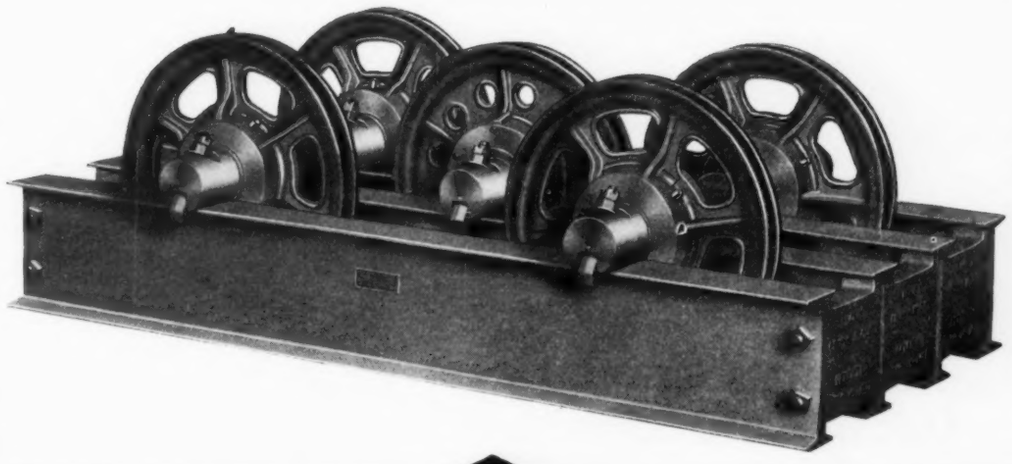
Safe workmen are made by developing in them the foresight which causes them to avoid injury. This is done through safety posters, first aid training, investigatioin of accidents and the evident interest of the management.

Posters placed regularly on the bulletin boards serve to keep interest ever present in the minds of the workmen and show them how to avoid certain accident hazards. Posters made from photographs taken in your own plant can be used to show how a woman was injured by his own act.

First Aid Training

First aid training has proved itself as a means of accident prevention. When a workman knows what an injury is, knows how to take care of it and the consequence of neglecting it, he is more thoughtful about avoiding injury. Thousands of dollars are saved annually by oil companies in death compensation settlements through the use of artificial respiration alone. Case after case is on record where men overcome by petroleum vapor and apparently not breathing have been resuscitated by fellow workmen. The United States Bureau of Mines has done a wonderful work in training oil workers in first aid. Wherever a suitable class can be arranged they have been furnishing first aid instructors free. First aid kits and men trained in first aid are to accident prevention as a fire extinguisher and the trained fire fighter are to fire prevention.

Thorough investigation of every accident, determining the cause and placing the responsibility makes workmen more thoughtful and careful. I am told



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Lucey All-manganese Sheave Crown Block for Handling Heavy Strings of Pipe!

A Real Achievement in Smooth Easy Running Crown Blocks

OUTSTANDING FEATURES:—

1 Genuine "LUCEY AMSCO" Manganese Steel Sheaves lessens wear on Wire Line.

2 Hook Bolts fitted with Castellated Nuts and Cotter Pins—eliminating all hazard of loose parts.

3 Fast Sheave with TIMKEN Tapered Roller Bearings.

4 Other Sheaves with Lucey Patented TWO-STAGE Bearings.

5 ALEMITE Lubrication throughout.

6 Solid Forged Steel Shafts.

7 Fully adjustable.

If desired, Lucey Crown Blocks can be furnished with all TIMKEN Bearing Sheaves and any combination of Sheaves desired.

Lucey Crown Block Bulletin No. 112 tells you all about it—write for it.

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Maintains Constant Level Hot or Cold Liquids

In tanks, cisterns or reservoirs where a constant level of hot or cold water, oil or other liquids is desired the Neilan Balanced Float Valve can be relied upon to give the fullest measure of satisfactory service. It is durable, accurate and sensitive in operation.

For corrosive liquids and gases, and high temperatures, this valve can be furnished with seat rings and balanced valves of stainless steel, Monel metal, aluminum, or other alloys. Regularly furnished with seamless copper floats. Steel, lead coated, or aluminum floats will be supplied when desired. Made in globe and angle patterns.

Suitable for working pressures up to 200 lbs., with cold liquids; up to 150 lbs., with hot liquids. Complete data furnished on request.

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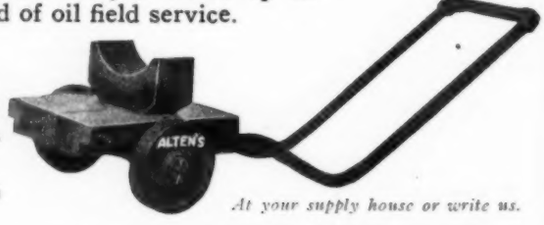
"You Can Be Sure of Neilan Products"

Dependable! That's Alten!

One of the outstanding features of Alten's Casing Wagons is the ability to stand up under the hardest kind of oil field service.



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Foundry & Machine Works

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that a man was killed in Western Pennsylvania by an explosion in a filter presumably caused by an electric spark from an extension cord. Another man was killed by an explosion in a tank car while assisting a workman who had been overcome by gas out of the tank car. If the specific causes of these accidents were made known to others, special provisions could be made to prevent their repetition. By placing the responsibility for accidents men are made more thoughtful about taking chances or building up unsafe conditions. No workman wants to be blamed for an accident, especially for one which injures a fellowman.

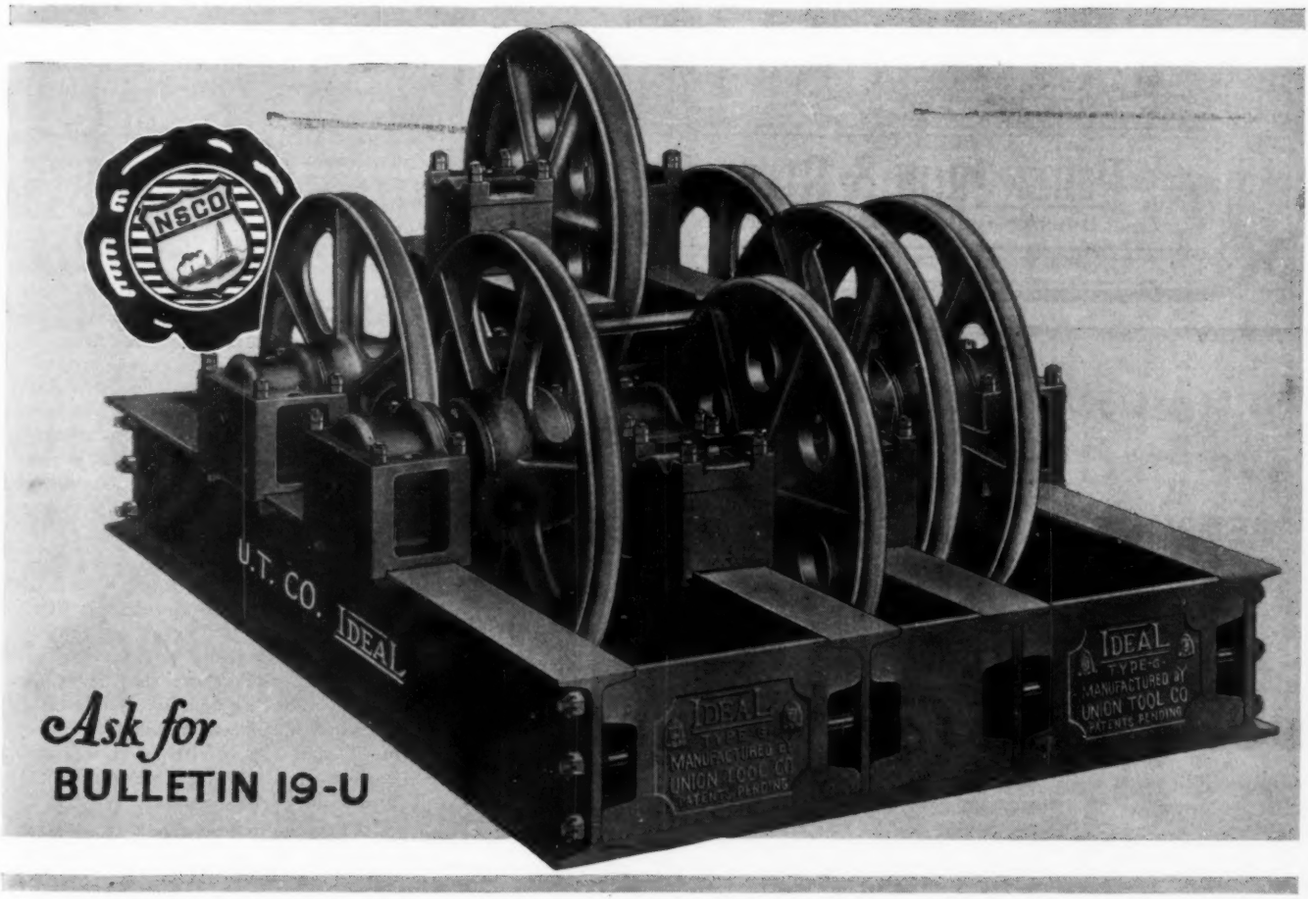
Placing Responsibility

Responsibility for accident prevention should be delegated to some individual in every plant. It should be a pleasure to the fire prevention men within the companies of the National Petroleum Association to undertake this work which can be so beneficial to your organizations, and should you, as managers of your companies, delegate accident prevention work to your fire marshals you must not get the idea that the responsibility has been passed to the fire marshal and that you, the managers, are relieved of further responsibility. You are making the fire marshal an accident prevention man to assist you in locating the hazards which may cause accidents the same as he has been assisting you in locating the hazards which may cause fires. If your fire marshal brings to your attention a situation which may cause a fire or an accident, and you as manager do nothing to change this situation and a fire or accident occurs, the responsibility will revert directly to you. You must realize that your fire prevention and accident prevention man is your assistant in protecting life and property, and you, as managers, must give him your whole-hearted encouragement and co-operation.

Suppose you buy your wife a new automobile for a Christmas present so that she may get more pleasure out of life. In order for her to do so, is it not necessary that you furnish gas, oil, and occasionally new tires, pay for paint jobs and repair bills, and probably accompany her on occasional drives? The accident prevention man is much in the same position. Management places on him the responsibility for preventing accidents, but must assist him with financial and moral support in accomplishing his work.

Accident prevention, while a welfare and humanitarian feature, has passed that point. It is a producing feature which helps to pay the dividends and is a part of good management.

IDEAL
CROWN BLOCK
TYPE "G"



Ask for
BULLETIN 19-U

THE NATIONAL SUPPLY COMPANIES

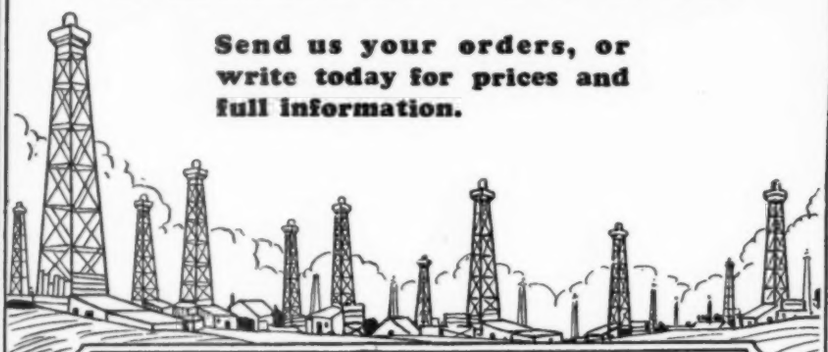
Say you saw it in The OIL WEEKLY

Everything *for the oil well*

We are Headquarters for

DERRICK TOOLS

Send us your orders, or write today for prices and full information.



PEDEN IRON & STEEL CO.

HOUSTON – SANANTONIO – SHREVEPORT

SERVICE

SERVICE

SOMETHING NEW IN PUMPS

A two-cylinder, single action, maximum service, light in weight and durable.

There are no pressed in or screwed in valve seats, no valve stems, no valve springs. The valves are monel metal ball type and valve seats and cages are one piece bronze that will not corrode when idle, starts without priming and anyone can operate or repair it. It is simple.

The inexpensive parts and simplicity in construction are some of the outstanding features of the TULSA PUMP. Heat nor cold cannot affect it, insuring mild, even temperature. Other features are *increased production, reduced maintenance cost* and *satisfactory preformance.* Being properly designed, continuous service is insured.

The TULSA PUMP is built for hard work. Initial try-outs have proven satisfactory and those who have seen it work pronounce its fluid handling capacity to be far ahead of other makes of similar size.

The TULSA PUMP is everything that a good pump should be plus service. Better be safe than sorry. It will make your dollars have more cents. Attractive prices will be quoted in the near future, f. o. b. Tulsa, Oklahoma.

See This Pump on Exhibit at the Petroleum Exposition.

Manufactured by

TULSA PUMP COMPANY

5 Boston Building Tulsa Oklahoma

Inspection, Rebuilding and Accurate Records Reduce Truck Cost

(Continued from page 144)

miles at a total cost of $27,456.80. In 126 months it had used $3188.98 worth of gas and oil, and the salary of the drivers and helpers had been $12,103.79.

Totals are made every three months on a yearly basis, but in red figures to segregate them easier from the grand total.

This proves, according to Mr. Gwynne, that a proper cost accounting system and proper supervision of operation are more essential than the consideration of the original cost of the unit. It is by watching the life history of each truck, checking the number of idle days against each truck, urging the producing and sales department to provide more work for each truck so as to eliminate the idle time, and comparing the work of each unit with the average for the entire fleet that Mr. Gwynne has been able to reduce the costs.

Despite the fact that the company operates a fleet of more than 800 motor vehicles including trucks and passenger cars; maintains seven garages or base shops; employs a staff of 63 men in the mechanical and service department, and these trucks are operating in 15 States, no spare parts are kept.

Such a condition is unusual, when scores of firms, operating much smaller motor fleets have extensive parts departments in connection with their shops and buy these parts in quantities. This company, however, believes that the expense of supervising the parts departments, checking the replacements and withdrawals, and the rental of the space occupied by such departments would exceed the discount obtained by buying parts in wholesale quantities.

The system of servicing and repairing the units in this mammoth fleet of motor vehicles, scattered as they are, is constructed along engineering principles with the result that it is quite possible that the cost of operation and servicing has been reduced to a point lower than that of other concerns operating in a similar field and in the same line of business.

"While we do not stock spare parts," says Mr. Gwynne, "we do stock spare units."

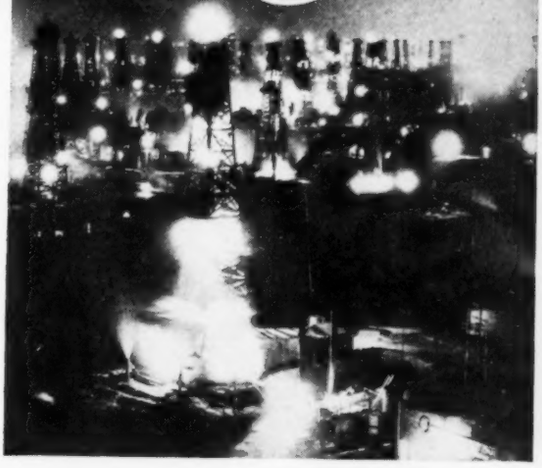
And here is how it works:

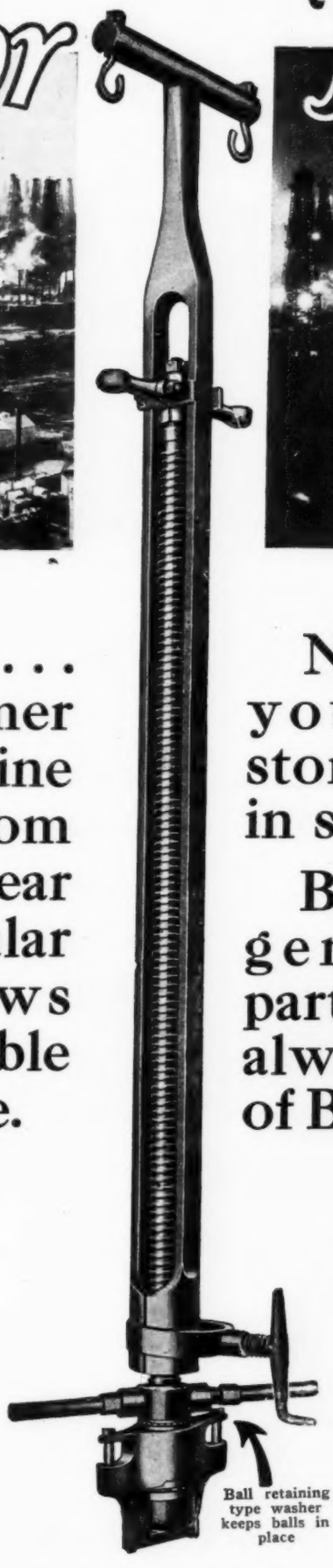
There are seven base shops which are located as follows: Wichita Falls, Texas; Tulsa, Okla.; Pueblo, Colo.; Denver, Colo.; Kansas City, Mo.; Butte, Mont.; Salt Lake City, Utah. Then there are three sub-shops operating under base shops. They are at Salt Creek and Casper, Wyo., and Shiprock, N. M.

Relief Unit System

All rebuilding of motor equipment is accomplished at these shops. At each

Day or Night





Ball retaining type washer keeps balls in place

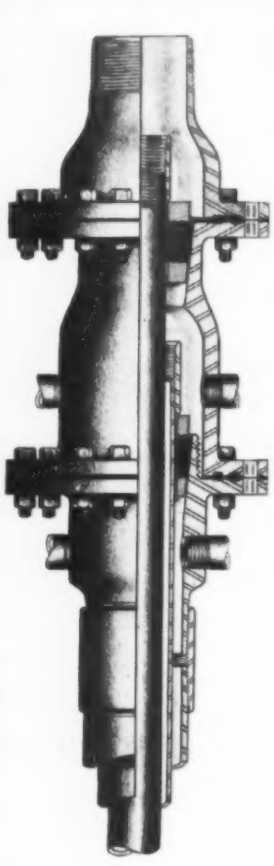
Day or night . . . winter or summer . . . days of sunshine and days of gloom . . . year in and year out, Burns Tubular Temper Screws deliver dependable low cost service.

No matter where you are, supply stores carry them in stock.

Be sure you use genuine Burns parts then you will always be certain of Burns operation.

TEMPER BURNS SCREW

BURNS
Tool Company
OKMULGEE, OKLAHOMA



Warren Control Head

A Safety Device for Wildcat and High-Pressure Territories—

The Warren Control Head is a highly perfected and thoroughly dependable device for use in wildcat and high-pressure gas fields, providing a simple and positive means of controlling heavy gas pressure.

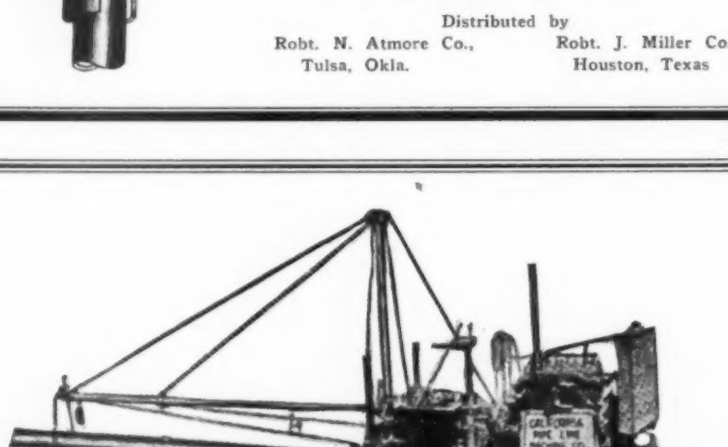
It consists of but three main parts: the flanged body, the intermediate cap, and the top cap. The body also functions as a blow-out preventer, and the flange provides means for running a connection out to the Christmas Tree.

The top cap can be set down directly upon the body if desired. The intermediate cap enables running a tubing string inside of pipe already set, with both strings under control, and then connecting to the Christmas Tree. As many intermediate caps as required can be used.

Complete Particulars On Request

SHAFFER TOOL WORKS
Brea, California, U. S. A.

Distributed by
Robt. N. Atmore Co., Tulsa, Okla.
Robt. J. Miller Co., Houston, Texas



The above machine has record of laying 8,000 feet of 10-inch pipe per day. Another of our machines recently laid 7,000 feet of 12-inch pipe on The Humble Pipe Line Co.'s work in Texas.

The work is done at a saving of 75% of the cost of manual labor and is done better. Every joint is tight.

With our machine the necessary bends are made "right now"—even 10 and 12-inch pipe is bent COLD.

Machines for laying all sizes from four to twelve-inch for sale or lease.

CALIFORNIA PIPE LINE MACHINE CO.
KANSAS CITY, MO.

base shop are several units known as "active relief units." There are from one to three passenger cars and about five different sized trucks in the active relief of every division. Then there is generally one or two units, known as "general office reserve" at each division base.

When a truck is in need of overhauling or rebuilding, it is pulled into the base shop and is replaced by one of the active relief units. The active relief unit becomes a part of the active fleet, then, and stays on duty until it needs to be rebuilt itself. The truck that was pulled in, is completely rebuilt and placed in a condition within 95 per cent of the excellence of a brand new machine and becomes a member of the active relief, and is held at the base shop until it is needed in the field.

The standards of the company are so high that when a truck is rebuilt, it is done thoroughly, every major and minor part of the machine is inspected and replacements of parts are then made. The purchase of these parts is done only as needed, and it takes but a few minutes for a shop boy to jump into a car and go to a parts store and get what is necessary.

The company does not operate on the theory that a truck should be junked or traded in on new equipment after so many years of service or so many miles of work. Theoretically, the truck stays in service forever—as long as replacement parts for it can be obtained. However, there are instances when a truck is so badly damaged by a collision or some other kind of an accident that it does not pay to endeavor to rebuild it. Then it is disposed of at the best possible price. It is under these conditions that units from the general office reserve go into service. For example, in case a truck is wrecked, it is replaced by one from the active relief organization, and this unit in turn is replaced by one from the general office reserve. It is explained that regardless of where an accident might befall one of the company's fleet—be it a truck or a passenger car—another one will be in its place within 24 hours at the maximum—there must be no hitch in the transportation department.

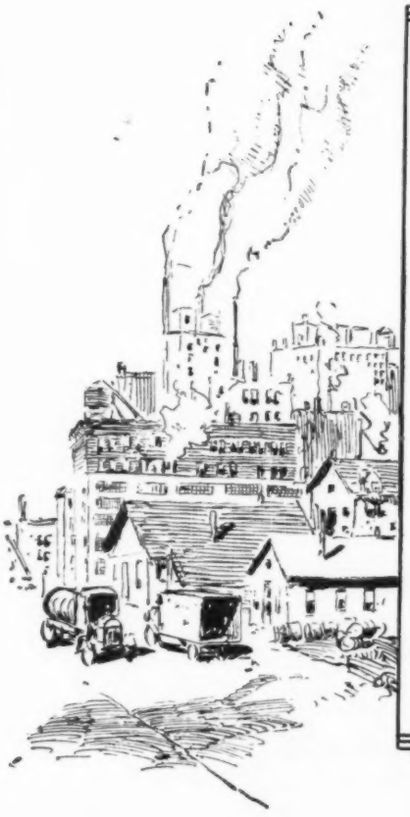
The company follows no set time on rebuilding, painting, overhauling. This work is governed by a well organized inspection department which functions in a rather peculiar manner owing to the fact that the equipment is scattered over so much territory.

The operation and maintenance of the entire fleet is controlled out of the Denver office. Under Mr. Gwynne come two assistants; then next in line are the permanent and traveling inspectors. There are 21 such men in the field, working out of the several base shops.

Inspection Governs Building

Every 90 days each truck is inspected by a traveling inspector, who is also a mechanic, carries some tools with

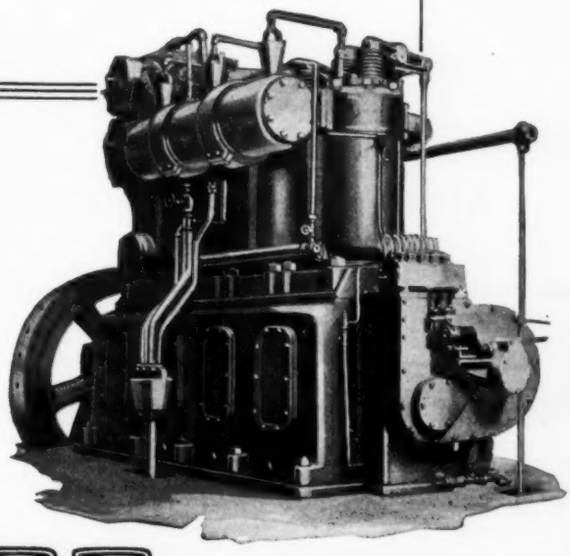
HOPE VERTICAL COMPRESSORS



The purchaser of a gas compressor pays for a machine, but what he buys is an ability to compress gas. The measure of the economy of his purchase is the total cost per million cubic feet of gas compressed. The Hope Vertical is revealing costs which distinguish it as the most economical gas compressor made. And its economy is not a diminishing quality.

Ask us for specifications.

HE-34



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HOPE ENGINEERING AND SUPPLY COMPANY

DESIGNERS MANUFACTURERS

MOUNT VERNON, OHIO, U.S.A.
DALLAS, TEX. TULSA, OKLA. CASPER, WYO.

Say you saw it in The OIL WEEKLY

United States Torpedo Company

Manufacturers of

NITRO GLYCERINE and DYNAMITE

Main Office: Electra, Texas. Phone No. 584

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All Pioneer Oil Well Shooters

McGregor Working Barrel—The Barrel that Works

This barrel saves pulling tubing. Where you have a leaky standing valve or a worn out working barrel pull the rods out and take off the valve stem and screw the McGregor Working Barrel on to the rods which go in and seats on top of your working barrel leaving you a large cup to pump with and you have the same inlet as you have on the regular working barrel that is attached to your tubing. In a new well use the McGregor Seat, part "M", which saves you the cost of buying any other working barrels and when you pull the McGregor you get all of your valves. It takes less power to run them and they are made for all size tubing.

We manufacture the standard 1 3/4-inch Steel, Brass and Cast Iron Working Barrels; all size working valves and lower valves; all size balls and seats, Steel, Brass, Bronze and Stainless. We handle all size and makes of cups.

Ask your dealer for any of the above material. If you are unable to get it we will ship you direct. Write for prices and catalogue.

In ordering parts refer to these letters

USE "MAC" BALL AND SEAT

McGREGOR WORKING BARREL COMPANY, Inc., Bradford, Penna.

him and makes minor and some major repairs on the ground. If he finds that the truck requires considerable work on it—possibly rebuilding—he reports the condition, and, if the general office also believes that a rebuilding is necessary, it is pulled into the base shop for this service. The traveling inspector, according to Mr. Gwynne, is the eye of the general office.

Every six months the shop superintendents must make a physical inspection of all units under their jurisdiction. This includes a road test, also.

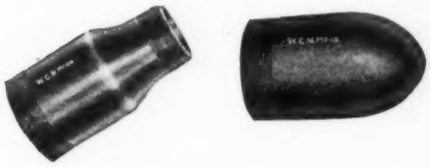
Back of the traveling inspectors are Mr. Gwynne's two assistants, R. L. Despain and W. H. Stephens. They check the inspectors as well as the shop superintendents. Then once a year the general office checks up the entire system, by making personal inspection of various, random picked units which gives them a cross section of the equipment operating out of each base shop.

Major repairs are made only after the requisition has been approved by the general office. This really includes minor repairs, but they are generally so insignificant that the shop superintendents do not wait for the order to come back by mail.

There is one general order, and woe betide the mechanic who does not observe it to the letter. It is that any repair made to a truck must bring that truck or that part of the truck up to the standard of new equipment. When a truck is to be rebuilt, the shop foreman or inspector makes out a most detailed report of the condition of every significant and insignificant part of the unit. The blank lists nearly 200 different items and by a series of symbols the condition of those parts are indicated as to "Good," "Fair" and "Bad"—literally interpreted as given in Webster's dictionary.

The shop superintendent estimates what it will cost to rebuild the unit, both as the labor and the cost of replacement parts. This is sent in to the general office where the truck's past history is noted. The history includes its initial cost, the number of miles it has run; the amount of work it has accomplished, the amount spent on repairs, and when it was last rebuilt. By comparing the new requisition for rebuild and the estimated cost with the cost of the last rebuild, Gwynne or his assistants may determine how thoroughly the previous job was done, and if it seems that the previous work was not up to standard—well, somebody's going to get a talking to.

In case the general office approves the rebuild, the shop superintendent faces another ordeal—that is keeping the actual expense within a few dollars of the estimated expense. If he underestimated and thereby is forced to slight some of the work, it will show up at later inspections and he'll be called on the carpet. If he overestimates, he will be checked up by



NORRIS

Swedge Nipples & Bull Plugs

No Norris Bull Plug has ever been known to leak

WHEREVER the search for oil has led . . . when the question of Swedge Nipples and Bull Plugs is under consideration the Norris Quality Mark is immediately recognized for dependability.

Norris Swedge Nipples and Bull Plugs through quality and dependability on the job, have won for themselves the highest indorsement of Petroleum Engineers, Superintendents and Production Men of long experience.

As a result the Norris output of Swedge Nipples and Bull Plugs is the largest in the world. A conclusive tribute to quality of raw materials and manufacturing skill.

The thousands of Norris Swedge Nipples and Bull Plugs in use in all parts of the world are proof of quality that does not vary. Yet, made in the shops nearest the Oil Fields Norris Quality costs no more and pays big dividends in service.

W. C. NORRIS, ***Manufacturer***
Tulsa, Oklahoma

Branch Warehouse:
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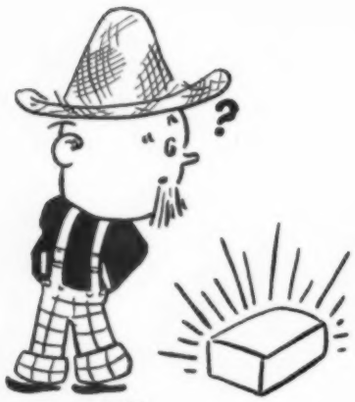
Republic Supply Company of California Pacific Coast Distributors

W. C. NORRIS MANUFACTURER

NORRIS QUALITY PRODUCTS

At all Leading Supply Companies Mid-Continent



All is not gold

Buying a gauge cock on looks, puts you in the place of the farmer and the gold brick. You may get the best of the bargain and then again you may not.

Over 50,000 Shaffer Boiler Gauge Cocks have been sold in the last three years. Like any successful product naturally there have been many imitators, most of which have fallen by the wayside due to corrosion. Shaffer gauges will not corrode with the worst salt water or alkali conditions —then, too, all the new boilers of Broderick, Donovan, Farrar & Trefts, Kewanee, Lucey and Titusville, come equipped with SHAFFER'S.

One of the many reasons why oil men from the British West Indies to California prefer them is the low upkeep—.25c buys a new wheel, being practically the only part necessary to make the gauges last the life of the boiler.

Try a set from your supply store and you'll wonder how you ever got along without them.

J. E. SHAFFER CO.
316 Mid-Continent Bldg.
Tulsa, Oklahoma

Price $2.25

All Parts Are Interchangeable

Made in two sizes, ½ or ¾-inch. Furnished with combination fibre wheels or a special all-metal wheel for strong alkali water. Extra wheels 25c each.

SHAFFER
the Standard Boiler
Gauge Cock

the general office because of the previous work he did on the machine, or because his figures indicate he doesn't know his business.

Drivers Duties

The painting of the trucks is decided in the same manner—the inspectors look them over and decide whether it is time to paint them and bring them up to the Continental standard in appearance. The company does not do all of its own painting—only in the Denver shop are there facilities for this work. In the other divisions the work is turned over to a painting concern.

The drivers of the trucks and cars are held responsible for the water in the radiator, gas and oil. In the field the operators are held responsible, too, for the grease. At the base shops, however, those units which are garaged at the shops are greased by the shop force—they are also washed by the shop force. The gas and oil is charged to each machine as it is taken out. At the base shops, the oil and gas are dispensed when the trucks load up at night for the next morning's delivery. They take on their loads, pull into the garage and receive their fuel supplies just inside the door; then they pull into their stalls.

A casual glance at the extensive inspection system might lead one to the conclusion that the expense of the traveling inspectors and the large number of machinists employed would increase the cost of fleet operation, for certainly some one might remark that the inspector who travels all day, for example, to reach his next destination and finds nothing wrong at that point, wasted a bunch of money. Not so, for the cost of delivery service is based upon the amount of work accomplished, which in turn is based upon keeping the units of the fleet in a condition to perform service. The system has enabled the department to reduce the number of units in service, by decreasing the number of days of idle, and, in turn, increased the gallonage or material distributed, which means a reduction in the cost of operation.

CORRECTION NOTICE

In an article which appeared on the New Equipment Page of the September 2 issue of The OIL WEEKLY, describing the Alco 4-Way Bit, no mention was made of the fact that the bit is made by the Alco Oil Tool Company, Compton, California, and distributed by the Elliott Core Drilling Company.

The real name of the bit is the Alco 4-Way Drilling Bit. Elliott Core Drilling Company is handling the bit in the Mid-Continent territory.

Ward

Boiler Scale REMOVER

Dissolves hardest scale—Prevents scale forming on tubes and side walls of boiler—protects metal indefinitely.

Results Are GUARANTEED

Write today for Plant Analysis Record. Plant water tests made free upon request.

Manufacturers of Acids for Tool Fishing and Cleaning out Wells.

Iron Oxide for Rotary Mud.

QUICKSET for Curing Cement.

Ward Chemical Co.

"Heavy Chemicals for the Oil Industry"

TULSA, OKLAHOMA

Phone 2-1877

Every hole a mystery until the last string is set

How deep? How straight? What unexpected formations? Will your casing have an adequate factor of safety to withstand emergency strains—or will you be continually confronted with the spectre of collapse or other casing failure—a costly fishing job—possibly a lost hole?

Pittsburgh Seamless Casing is the best insurance against these unknown factors. A string of Pittsburgh Seamless has a *one-third greater* factor of safety than lap-weld casing. Don't take a chance—use Pittsburgh Seamless.

The Pilger Process— Seamless in Larger Sizes

The greatest forward step ever taken in making stronger casing in the larger sizes. Steel actually *forged*. This process is turning out a uniform, high quality casing that has the same relative strength and factor of safety as seamless casing in the smaller sizes. Pilger casing can be had in a wide range of sizes up to 13 3-8".

And remember this: We have never lost a hole due to the failure of Pittsburgh Seamless Casing.

Pittsburgh Seamless Casing is made in longer lengths than lap-weld. It saves time and expense in the field. It is insurance against costly accidents and delays. Our booklet "Seamless Tubes for Oil Country Purposes" tells about the Pilger Process—a process in which every oil man is interested. Free on request.

Pittsburgh Steel Products Company. (Division of the Pittsburgh Steel Company.) Pittsburgh, New York, Detroit, Chicago, Houston, Tulsa, Los Angeles.

Pipe storage yard at Memphis—*Fast Service*

Complete stocks at Memphis, supplemented by jobbers' stocks at many points, afford unexcelled service on deliveries.

Largest exclusive makers of Seamless Tubing in America

For over 20 years our entire resources have been focused on one objective—how to make a better seamless tube. Today our methods are the most up-to-date that engineers and scientists have developed. Due to this carefully concentrated attention to only one type of tubing, we have become the largest company in America devoted exclusively to its manufacture.

Pittsburgh Seamless

P

Say you saw it in The OIL WEEKLY

Hairline Precision

Precision at all times in its manufacture—careful selection of material—and years of experience,—that tells the story of Diamond "H" Bit and

DIAMOND—H— Bit and Jar Steel

Jar Steel—a product of unvarying uniformity that has always been made on a quality basis only.

HEPPENSTALL Forge & Knife Co.

PITTSBURGH, PENNA.

Fort Worth, Texas, Office
1415 F. & M. Bank Building

Treating Plant Quickly and Cheaply Installed

Using equipment already on the lease, you can soon arrange a plant for treating any quantity and any variety of "cut oil" with—

Tret-O-Lite

There is no heavy investment. Sufficient treating capacity for flush production does not penalize the operator at a later period.

WM. S. BARNICKEL & CO.
St. Louis, Mo.

Tret-O-Lite

Potrero Much Drilled With No Evidence of Production

(Continued from page 138)

ciated had shut down Cypress 1, Julian Petroleum Corporation's Smith 1 was spudded and, as if trying for a record, in five days had 15½-inch cemented at 1000 feet.

Rush of Drilling

The year 1927 opened with the original Associated well still idle and the Julian Petroleum Smith drilling at 2200 feet. During the month of January it began to look as if "60-day" clauses in the leases were taking effect. General Petroleum Corporation staked a location 250 feet north of the Julian well and after that the area acquired all the sounds of an oil field—the pounding of the rig builder's hammer, the clang of metal and the deep rumble of big truck motors—everything but the gurgle of oil flowing into the tank. By the middle of February, 14 derricks were up and several other foundations were in; then "there was a dull thud and all was still" (read any detective story). Julian Petroleum Corporation's Smith 1 passed through the Associated's oil horizon and found about one-half inch of oil sand; one month later at two feet deeper than a mile the well was abandoned. The Alamitos Heights town lot district of Seal Beach about this time provided a useful diversion, absorbing the activities of the Potrero operators and breaking the heavy fall of some lease brokers whose profits were all in the form of Potrero royalties.

The following example of a lot owner's thought processes is typical of what frequently happens in this hazardous business. A woman owned a single lot in a choice location; when trading was at its height, for this lot which had cost her $1500 she was offered $12,000. Her reply is worthy of record: "Well I think I'll gamble on the oil." She gambled on the oil all right, but what was the amount of her gamble?—not $1500, but the difference between that amount and $12,000. A few words more complete the story: a month later the market va'ue of the lot had reverted to approximately the original $1500.

Before Julian Petroleum Corporation had encountered the thin stringer which proved to be its only encouragement, General Petroleum Corporation spudded its Smith 1; when the Julian well stopped drilling the General Petroleum well had not quite reached the horizon where the Julian showing was found; in fact the General Petroleum never did find this elusive oil streak and it would be difficult to find a location in the Los Angeles basin where you could drill a well and get less oil than was discovered in this wasteful piece of offset drilling.

Two more dry holes have been drilled at Potrero since April, 1927, being the last of the total of 15 as previously summed up. Julian Petroleum Corporation upon abandoning its Smith 1 immediately moved its crew to the 10 acres, which was its first lease acquired, and, one-half mile northwest from the Associated Cypress 1, Julian Petroleum Corporation's Cypress Heights 1 was drilled. Played as almost a sure shot by speculators and watched with the utmost respect by the larger oil companies, Cypress Heights 1 is now officially suspended at 5042 feet; no further comment is necessary. While the second Associated well, Johnson 1, drilled one mile southeast from Cypress 1, was held in high favor by many, the Julian Cypress Heights well was really the last to stimulate any of the old-time "sure shot" feeling. The Johnson 1 passed beyond the zone of probable produc-

Separators

for oil and gas are a necessary part of oil well equipment since gas has taken its place as one of the important products from the oil well.

We have specialized in oil and gas separation for many years and we are prepared to supply a separator that will meet your most exacting requirement.

We invite your inquiries on any separation problems you may have.

Trumble Gas Trap Company

701-734 Higgins Building
LOS ANGELES, CAL.

TULSA
C. F. Camp,
221 East Archer Street.

MONTANA, WYOMING AND ALBERTA
Great Northern Tool & Supply Co.
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MONROE "Talon" Rope Spears and Grabs

The most complete line of Rope Fishing Tools ever shown. Booths 27-28 Oklahoma Bldg. If unable to attend the "Big Show" write for particulars.

Note the "Talon" Grip. The harder you jar the tighter it grips.

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Manufactured by

The Cameron Tool & Supply Co.
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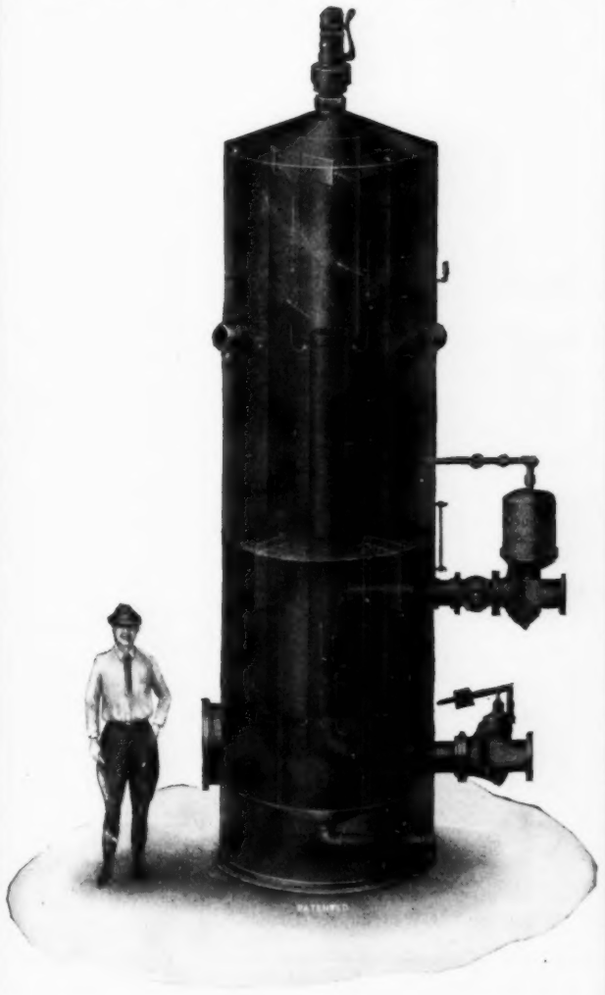
"Use the better tool first"

BUCK

THE ONE
Oil and Gas Separator
that is
SPECIALLY DESIGNED
for Bad Sand Conditions



Sand will settle out of crude—if given a chance—BUCK Separators present this opportunity of settling out. The oil is handled quietly—without agitation, so that it must first settle down gradually, and then reverse its direction and rise into a quiet settling chamber from which it gravitates over to stock tanks.

Thus—the sand drops out of the oil when the flow reverses from downward to upward into the quiet chamber.

In addition to large capacity for gas—gas scrubbed clean of all oil mist—this feature of quiet, fully settled oil brings bad sand conditions within control.

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Gustin-Bacon Mfg. Co.
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Patented
Lower
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The Friend of the Roustabout

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Fewer
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For increased production, longest life, and minimized operating expense, the "Ewing" will last as long as a dozen of the old leather ring type.

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DIVIDEND NOTICE

Imperial Royalties Company

Will pay monthly dividend of 1½% to Preferred Shareholders on September 30. This is Dividend No. 84 and makes a total of 146*% paid to shareholders.

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336 Mayo Building, Tulsa, Okla.

tion without many holders of protection acreage being among those present.

Nearly all possible geological theories have been used up in trying to explain this area during its jazzy life; except that it would represent a condition "unusual" in Los Angeles Basin, the valley features just south of the Julian Cypress Heights and north of the Associated Johnson may very reasonably be considered as representing cross faults. It is an interesting pastime to trace on thin paper the outline of Rosecrans field and superimpose it upon the Potrero area, including in it the Associated Cypress 1 and excluding all other wells. While the Associated Johnson well presented favorable possibilities, a field similar to Rosecrans could be present adjoining and paralleling the fault. (The Rosecrans outline as drawn on the accompanying topographic map is somewhat generalized, the commercially productive width being much narrower at certain places). Two remaining possibilities are indicated in dotted lines; one area is parallel and adjacent to and restricted to the hypothetical tilted fault block; the other is 'en echelon," similar in trend to the other fields, necessarily narrow but extending unrestricted to the northwest. Distinct from the Associated Cypress problem, the topographic elevation on which the Standard Farrell well was drilled is considered to have favorable possibilities, and it is probable that another wildcat will eventually be drilled north of the Farrell. Even the Associated Cypress well is now regarded with skepticism in some quarters, but just let the word get around that the company is preparing to make a test and the Associated field men may as well prepare for a 100 per cent attendance of oil scouts.

New Gas Line

Tulsa.—Gas for commercial utilization will be piped to a point near Muskogee through a five mile four-inch welded line now under construction. The supply well came from the D. L. T. Oil and Gas Company's wells several miles north of Muskogee.

Creek County Well

Tulsa. — Independent Oil & Gas Company's Wolfe 1, opener of a new Wilcox sand pool in the Hall-Donnelly field, Creek County, southeast of the southwest of the northeast of 18-14-10, flowed 422 barrels September 7. It was formerly a producer from the Dutcher sand found before deepening to the Wilcox at 3411-13 feet early in September.

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